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Potts Hill Eastern Precinct

Site Services & Stormwater Management Report

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SYNOPSIS

This report was prepared in support of the Part 3 Project Application for the proposed subdivision of the Potts Hill Eastern Precinct. It presents the investigation & results undertaken for the development of a best practice Stormwater Management Strategy for the site. It also assesses the capability of the existing services in the vicinity of Eastern Precinct (EP) site and any upgrades required to cater for this development.

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PROJECT 7337 - POTTS HILL EASTERN PRECINCT

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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

CONTENTS

1.	INTRODUCTION	1
1.1	Certification	2
2.	EXISTING CONDITIONS	3
2.1	Existing Topography	3
2.2	Existing Drainage.....	4
2.3	Existing Geotechnical Conditions	4
3.	PROPOSED DEVELOPMENT	6
4.	SERVICES	7
4.1	Potable Water	7
4.2	Recycled Water.....	7
4.3	Sewer	8
4.4	Electricity.....	8
4.5	Gas	9
4.6	Telecommunications	9
4.7	Servicing Conclusions	9
5.	STORMWATER MANAGEMENT STRATEGY	10
5.1	Development Guidelines, Policy & Objectives.....	11
5.1.1	Bankstown City Council's Development Engineering Standard	11
5.1.2	Department of Environment and Climate Change (DECC) Water Quality Guidelines 12	
5.1.3	Australian and New Zealand Guidelines for Fresh and Marine Water Quality" ...	12
5.1.4	Adopted Water Management Objectives	13
6.	HYDROLOGY	14
6.1	Sub-catchment.....	14
6.2	RAFTS	14
6.2.1	Modelling Assumptions	14
6.2.2	Model Parameters.....	15



LANDCOM, SYDNEY WATER & NPC

POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

6.2.3	Pre-development Condition RAFTS Modelling	16
6.2.4	Proposed Condition (No Detention) RAFTS Modelling	20
6.2.5	Proposed Condition (<i>With Detention</i>) RAFTS Modelling	22
7.	STORMWATER QUALITY MANAGEMENT STRATEGY	31
7.1	CONSTRUCTION PHASE.....	31
7.2	POST DEVELOPMENT PHASE.....	31
7.3	ASSESSMENT METHODOLOGY (MUSIC).....	32
7.3.1	Rainfall	32
7.3.2	Evaporation	33
7.3.3	Soil Data and Model Calibration	33
7.3.4	EMC Values	34
7.4	Pre Development Conditions	35
7.5	Proposed Development No-Treatment Conditions.....	36
7.6	Proposed Development with Treatment Conditions	37
7.6.1	Catchment Conditions.....	37
7.6.2	Proposed WSUD Treatment Measures Assumption	38
7.6.3	Rainwater Tanks	38
7.6.4	Gross Pollutant Traps	38
7.6.5	Bio-retention Systems/Rain Gardens	38
7.6.6	Configuration of Treatment Measures	39
7.6.7	Treatment Train Performance.....	42
7.7	Volumetric Runoff Coefficients	43
7.8	Maintenance of Water Quality Control Measures.....	44
8.	SUSTAINABILITY / REUSE	45
8.1	Rainwater Harvesting	45
8.2	Recycled Water.....	46
9.	STORMWATER DRAINAGE CONCEPT	47
10.	CONCLUSION AND RECOMMENDATION	49



LANDCOM, SYDNEY WATER & NPC

POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

11.	REFERENCES	50
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Appendices

APPENDIX 1 - EXISTING SERVICES PLAN

APPENDIX 2 - SITE PLAN

APPENDIX 3 - RAFTS CATCHMENT PLAN

APPENDIX 4 - STORMWATER DRAINAGE CONCEPT PLAN

APPENDIX 5 - RAFTS RESULT

APPENDIX 6 - MUSIC RESULT

APPENDIX 7 - CURRICULUM VITAE (MICHAEL J SHAW)

APPENDIX 8 - PA CIVIL DESIGN DRAWINGS



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

1. INTRODUCTION

Worley Parsons have been engaged by Landcom to prepare a site services & stormwater management report in support of the proposed Project Application (PA) for the proposed industrial subdivision of the Potts Hill Eastern Precinct (EP).

The Potts Hill Eastern Precinct is a 16 ha subdivision consisting of five individual lots and associated civil infrastructure as shown in **Figure 2**. The EP is located on the eastern side of the existing Potts Hill Reservoir 2. It is part of the existing Sydney Water land at Potts Hill described as Lot 2 DP 225818. The total SWC Lot 2 area is approximately 116 ha.

Each individual future lot owners will have a proposal for constructing various developments on their lots including office buildings, workshop buildings, warehouses and associated carpark and landscaping areas.

This report investigates the servicing aspects of the proposed subdivision development including utility services such as water, sewer, gas, power and telecommunication as well as recycled water. It also details the proposed stormwater management strategy for the subdivision as a whole. Site specific servicing & stormwater management proposals will follow in time for the individual lots.

In summary, this investigation included the following tasks;

- Assessing the existing utility services in the vicinity of the site and their capability to serve the proposed development;
- Determining 5, 20 & 100 Year Average Recurrence Interval (ARI) stormwater discharge rates for both the pre-development and post development scenarios;
- Undertaking stormwater detention analysis to ensure post development stormwater discharge rates are brought back to pre-development levels;
- Undertaking water quality modelling for the site using MUSIC to determine the size and configuration of required treatment devices;
- Develop a stormwater drainage concept for the site; and
- Prepare a site services & stormwater management report to address the DG's requirements.



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

1.1 Certification

The contents of this report are certified by Michael Shaw, who is a registered NPER engineer with the Institution of Engineers, to comply as a minimum with the requirements of Bankstown Council's Development Engineering Standard (July 2006). A copy of Michael's curriculum vitae has been attached in **Appendix 7** - .



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

2. EXISTING CONDITIONS

The proposed site is located in the suburb of Potts Hill within the Local Government Area of Bankstown. Nearby are existing SWC potable water reservoirs, known as Reservoir No. 1 and Reservoir No. 2, ancillary buildings and supply infrastructure, such as pipelines. Currently, Reservoir No. 2 is used for water supply purposes whilst Reservoir No. 1 has been decommissioned.

The site is bordered by residential development fronting Graf Ave, Potts Park and Rookwood Road to the east, Reservoir No. 1 to the north, Reservoir No. 2 and open space to the west and Bruncker Road to the south. Refer to **Figure 1** for locality map.

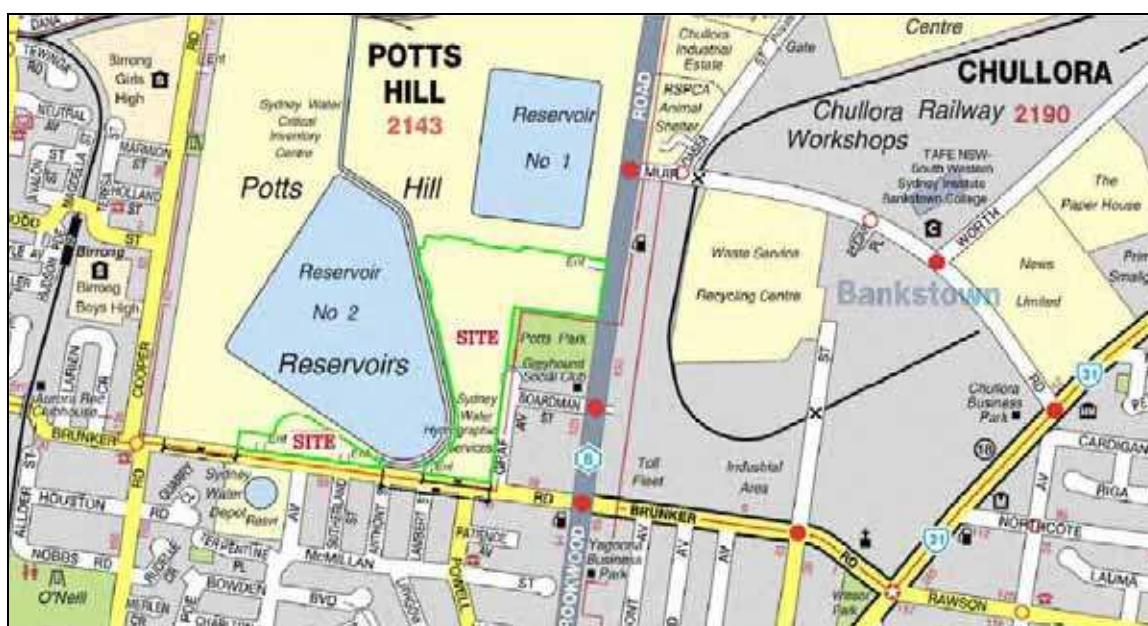


Figure 1 - Locality Map

2.1 Existing Topography

The slope of the site and its immediate surround varies significantly in different locations. Elevations start at approximately RL 65m AHD at the ridge line between Reservoir 1 & 2 to RL 44m AHD at the toe of the embankment adjacent to the Potts Park. The area immediately to the east of the Reservoir No. 2 is flat which then transitions steeply to Graf Ave via a 1(v):2(h) embankment. It is believed that soil from construction of the reservoir has been used in the past to form the flat platform to the east of Reservoir No. 2 which now forms the EP. The topography of the remaining areas is generally undulating. Due to its elevation, views to the Sydney CBD are clearly seen from top of the eastern embankment (ie *near Graf Avenue*).



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

2.2 Existing Drainage

The majority of the site ultimately drains in an easterly direction towards Rookwood Road and through the industrial area to the east. There are several existing stormwater pipelines, swales and overland flow paths within the site. Refer to **Appendix 1** - for details of the existing stormwater drainage features.

The drainage network diagram obtained from Bankstown City Council shows a 1050mm diameter pipe is currently connecting the majority of the subject site to Council's stormwater drainage system that runs east beneath Potts Park. The remaining areas of the site drain directly or run overland into Council's adjoining drainage infrastructure in the surrounding streets of Brunner Road and Rookwood Road.

The site itself is currently serviced by several stormwater drainage pipelines (*refer to **Appendix 1** - for a drainage network diagram*). Some of these drainage lines are capturing stormwater runoff from upstream catchments. These existing drainage systems need to be incorporated with the proposed development so that there will be no adverse impact on existing flow regimes.

The proposed Lot 105 site located between Brunner Road & Reservoir 2 consists of two existing drainage sub-catchments. One sub-catchment drains directly into the Brunner Road drainage system and the other sub-catchment drains into a bushland area to the north west of the site. The proposed lot 105 is currently occupied by Sydney Water office buildings, warehouse and carpark.

The site is located at the top of the catchment and does not contain any significant water courses. As such it is not subjected to mainstream flooding. However Bankstown City Council advised that the downstream drainage system has a limited capacity which in the past has resulted in flooding at Rookwood Road adjacent to Potts Park. Council have therefore stressed that it is critical that the proposed development does not exacerbate this problem.

2.3 Existing Geotechnical Conditions

A geotechnical investigation has been completed by Coffey Geotechnics for the subject site. A summary of the major outcomes of this investigation is as follows;

- The site is primarily underlain by uncontrolled fill. The site would be classified "P", unless the existing fill is excavated and replaced with proper compaction. The P classification requires engineering design of foundations;
- Ground improvements are recommended using impact rolling. This would require bulk earthworks on sloping ground to form level strips able to be compacted;
- The site geology is generally made up of silty clay soils derived from shale to interbedded shale and sandstone parent material;
- Coffey Geotechnics has identified that the embankment on the eastern and southern sides of the site is unstable and requires work to provide stability. This is likely to require bulk earthworks on this embankment along with installation of retaining walls; and



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SITE SERVICES & STORMWATER MANAGEMENT REPORT

- Soils were tested as part of the investigation and salinity was not considered significant for the site; however a moderate to slight dispersibility was encountered. The dispersibility could be addressed with adequate soil and erosion control measures during the construction phase.



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SITE SERVICES & STORMWATER MANAGEMENT REPORT

3. PROPOSED DEVELOPMENT

The proposal for development of the Potts Hill Eastern Precinct is to provide all subdivision infrastructure (*ie roads, drainage, lighting, retaining walls and utility services*) to allow for five future industrial lots. Refer to following **Figure 2** for the proposed Eastern Precinct Lot layout.

It has been assumed that all access roads for the subdivision will be dedicated to Bankstown Council and as such design has been undertaken to satisfy their requirements. Equally, the proposed intersections at both Rookwood Road and Bruncker Road have been designed to satisfy the requirements of both Council and the RTA.

Bulk earthworks, including embankment stabilisation works will be undertaken to provide useable development platforms. Details of the proposed bulk earthworks extents and other civil design works are included at **Appendix 8** - of this report.

For more details of the proposed development, refer to the PA documentation by JBA Planners.



Figure 2 - Eastern Precinct Development Layout



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SITE SERVICES & STORMWATER MANAGEMENT REPORT

4. SERVICES

An existing services investigation was undertaken for the subject site which included collection of detailed site survey data as well as a desktop services search. Detailed site survey was provided by both AWT and Lean & Hayward surveyors. A plan showing the extent of existing services within and immediately surrounding the EP site is attached at **Appendix 1** - .

The service authorities such as Sydney Water, Energy Australia, Telstra and Alinta have also been contacted in order to determine the capacity of existing services and their capability to serve the proposed development.

4.1 Potable Water

The proposed site is serviced by the Bankstown Potable Water System. According to the Sydney Water Development Servicing Plan (DSP) (2001), no major upgrade works have been identified for this system in the near future.

Preliminary service investigations show that the EP is bounded by numerous water reticulation services. Trunk mains exist on both the southern side of Brunker Road between Cooper Road and Rookwood Road and in Rookwood Road adjacent to the eastern boundary of the EP land. A100mm diameter reticulation mains exist in Graf Avenue and Boardman Street.

Based on the Feasibility letter dated 10th August 2007 from Sydney Water Corporations (Ref. 1), the Eastern Precinct (EP) can generally be serviced by Sydney Water's existing reticulation system. However, the area to the south (i.e. *the EA site*) will experience low water pressure. To alleviate the pressure issue and permit Sydney Water to meet its license agreement, a pressure booster pump system will need to be installed in this area.

Sydney Water has indicated that its existing infrastructure associated with the Potts Hill Reservoir will need to be adjusted, removed or protected as required to facilitate the proposed development. They have also indicated that a DN500 water main is required to be constructed from Brunker Road to Rookwood Road as part of the development (*ie as system improvement and not as a direct result of the development proposal itself*).

4.2 Recycled Water

The site is within 1.2km of the recently constructed Sydney Water recycled transfer main from Liverpool to Ashfield (LAP). The development can extend a lead in main approximately 1.2km to the site from the north to service the EP area. The exact connection point and route location to the recently constructed Sydney Water LAP transfer main is unknown. Before the recycled water can be used for domestic use it would require further tertiary treatment and disinfection. If implemented it is likely that this infrastructure would be installed on the northern side of Lot 2 (i.e. *on the overall Sydney Water reservoir site*). The EP may be able to use the recycled water without further treatment for



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

industrial use only. This would need to be investigated with Sydney Water once the development approval is granted.

4.3 Sewer

Preliminary investigations have indicated that there are limited sewerage services in both Bruncker Road and Rookwood Road adjacent to the respective southern and eastern boundaries of the Eastern Precinct. Local sewerage services exist in and adjacent to Graf Avenue and Boardman Street in the south-eastern corner of the site and the 400mm diameter Potts Hill Carrier main crosses Bruncker Road near the Rookwood Road intersection.

The Eastern Precinct (EP) drains to the Sydney Water's Southern and Western Suburbs Ocean Outfall Sewerage System (SWSOOS). This area currently has no DSP charges and the system has sufficient capacity. It is assumed the sewer system from the site will drain to the Potts Hill Carrier main located near the corner of Bruncker and Rookwood Road.

However, local amplification/augmentation of the local surrounding sewer systems will need to be completed to enable the development to proceed. The exact extent of the local works is unknown at this stage and detailed sewer modelling will need to be undertaken to determine the full scale of local amplification/augmentation.

A more detailed assessment of the potential impacts of development within the site on the SWSOOS is currently being undertaken.

4.4 Electricity

There are currently significant Energy Australia (EA) distribution assets within the road reserves surrounding the site in Bruncker Road and Graf Ave. Additionally, EA high-voltage (33kV) transmission assets exist in the abovementioned roads bordering the site. The site is encumbered by a privately owned Sydney Water HV (11kV) overhead line, One (1) off a ground mounted substation and a one (1) off pole mounted substation. These private assets are to be removed by Sydney Water prior to works commencing on the site. Sydney Water is currently preparing an alternative supply design to enable the removal of these assets.

Preliminary advice (*subject to confirmation of final loads*) from EA suggests that enough capacity exists in the high-voltage networks bordering the site to supply high-voltage to the proposed development without major augmentation or amplification.

Each lot within the EP development will require the provision of substations (*"kiosks or chamber type if required"*) at pertinent locations. The actual number of location of the substations required will be dependent on final load requirements of each lot.

A more detailed assessment of the proposed electrical load requirements is currently underway.



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

4.5 Gas

The gas reticulation diagram obtained from Alinta indicates that natural gas services are available in Brunner Road, Boardman Street and Rookwood Road. Upon contacting Alinta regarding the available capacity for the Eastern Precinct (EP), they could not confirm any potential upgrade requirement due to lack of load information available for individual lots. Once the detailed assessment of the requirements for servicing the each lot is available, Alinta will be able to provide advice on existing capacity. They have also advised that if there is not enough capacity that they will assess whether it is commercially viable for them to upgrade the system to accommodate the proposed development.

At this stage it is not anticipated that the proposed future uses for the EP subdivision will draw large gas loads.

4.6 Telecommunications

Servicing plans and information provided by Telstra have indicated that there is a main cable (*optical fibre*) adjacent the southern and eastern boundaries of the site in Brunner Road and Rookwood Road, respectively. Initial advice provided by Telstra indicated that any development within the site will be able to be adequately serviced by existing Telstra telecommunications services.

It should be noted that any special telecommunication requirement of any future lot has not been determined at this stage.

4.7 Servicing Conclusions

Overall the site is well served by all utility services & it is not envisaged that existing servicing capacity will be a constraint to the viability of the proposed development.



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

5. STORMWATER MANAGEMENT STRATEGY

A stormwater management strategy has been developed for the entire Eastern Precinct subdivision (i.e. *roads & lots*). The strategy has been designed to guide the implementation of appropriate lot based measures. However it is recognised that each lot may differ in its approach & layout. The most important requirement is that the water quality treatment/detention outcomes are achieved as a minimum.

The principles for application of best stormwater management practices are to maintain the post developed flows to meet pre-developed levels so as to reduce stress on receiving waters and minimise any downstream flooding impacts.

Detention is proposed to be provided through a combination of active storage above the extended detention in bio-retention basins or storage in dry basins and underground storage. This would as a minimum be compliant with Bankstown City Council's Development Engineering Standard (Ref. 3).

A water sensitive urban design (*WSUD*) approach has been adopted for the Eastern Precinct to mitigate any water quality impacts on neighbouring sites and downstream waterways. The principles for application of the best management practices include:

- At-source runoff control, such as rainwater reuse and bio-retention systems, and
- Integration of water quality control measures with the overall design.

The proposed development will include a range of best practice measures to meet the following Water Sensitive Urban Design (*WSUD*) objectives:

- Utilisation of roof runoff;
- Reduction in potable water consumption;
- Minimisation of impacts on downstream receiving waters;
- Safe conveyance of stormwater;
- Integration of water management measures with landscape design into the proposed development, and
- Sustainable use of available water resources.

A treatment train approach is proposed on this development to maintain stormwater quality to a required target level. This will include the removal of pollutants by a number of water quality treatment devices acting in series. The proposed stormwater treatment strategy consists of the following elements.

- runoff from roof areas would be collected in rainwater tanks and reused onsite for suitable non potable uses (*ie garden irrigation, toilet flushing, wash down areas, hot water systems etc*);



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

- surface runoff from the roads and lots would be directed to gross pollutant traps (GPT's) & litter baskets to remove coarse sediment, litter, & debris (*ie primary treatment*);
- surface runoff from large carparking areas, loading docks and heavily trafficked areas would be directed to measures designed to capture grease, oil and hydrocarbons which are more likely to be generated at an industrial site like the Potts Hill Eastern Precinct. Suggested proprietary devices include the Rocla Downstream Defender or equivalent; and
- surface runoff from roads and lots would be directed into bio-retention systems, sand filters or other proprietary devices designed to remove nutrients (*ie Stormfilter or equivalent*) located close to the source (*ie small catchment areas*).

5.1 Development Guidelines, Policy & Objectives

The following guidelines and policies were considered when deriving appropriate treatment/detention objectives for the proposed development.

5.1.1 Bankstown City Council's Development Engineering Standard

The Bankstown City Council Development Engineering Standards document (Ref 3) contains information with relation to required stormwater management for new developments as follows:

"OSD must be designed and constructed to control stormwater runoff from the development site such that, for 5 to 100 year ARI events, peak stormwater discharges from the site do not exceed pre-development stormwater discharges".

This policy does not indicate any specific water quality treatment target for new development. Instead it refers to the following publications as a starting point in determining appropriate stormwater treatment objectives.

- The Department of Environment and Climate Change (DECC) (Ref. 4) formerly known as EPA's manual on Managing Urban Stormwater (*Treatment Techniques*);
- Stormwater Treatment Devices User Guide (*NSW supply*); and
- The relevant Australian Standard for pollution Control devices.

In addition discussion with Bankstown City Council has revealed that the following water quality targets are likely to be a good starting point (note these targets align with the now superseded NSW EPA targets).

- 80% reduction in annual post development Total Suspended Solids (TSS) load;
- 45% reduction in annual post development Total Phosphorous (TP) load;
- 45% reduction in annual post development Total Nitrogen (TN) load; and
- 70% reduction in annual post development litter load.



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SITE SERVICES & STORMWATER MANAGEMENT REPORT

5.1.2 Department of Environment and Climate Change (DECC) Water Quality Guidelines

The water quality guidelines included in DECC's manual (Ref. 4) are presented below in **Table 5-1**.

Table 5-1 – Water Quality Targets (DECC)

	WATER QUALITY			
	% reduction in pollutant load			
	Gross Pollutants GP (> 5mm)	Total suspended solids (TSS)	Total Phosphorus (TP)	Total Nitrogen (TN)
Stormwater management objective	90	85	65	45

DECC's manual (Ref. 4) also indicates that a suitable proprietary water quality treatment device for capturing heavy metals and hydrocarbon etc should also be considered for industrial sites.

5.1.3 Australian and New Zealand Guidelines for Fresh and Marine Water Quality

A guideline commonly utilised in Australia to assist in setting of sustainable water quality objectives is the ANZECC document titled "Australian and New Zealand Guidelines for Fresh and Marine Water Quality" (2000) – Ref 5.

This guideline was prepared as part of Australia's National Water Quality Management Strategy (NWQMS) and provides a set of tools for assessing and managing ambient water quality in natural and semi natural water resources. It should be noted that it is "not meant to be applied directly to recycled water quality, contaminant levels in discharges from industry, mixing zones or stormwater quality, unless stormwater systems are regarded as having conservation value"(pg4 of "An Introduction to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 4A" ANZECC 2000).

"The ANZECC 2000 guidelines (have) moved away from setting fixed single number water quality criteria, and (now) emphasise water quality criteria that can be determined on a case by case basis, according to local environmental conditions. This is done through the use of local reference data and risk based decision frameworks..... The ANZECC 2000 Guidelines establish default trigger values that are set conservatively and can be assessed as a benchmark for assessing water quality. Further refinement of the trigger values may be needed to take account of local conditions" (NSW EPA website).



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

The ANZECC 2000 guidelines advocate a risk based approach to water quality management. That is, the impacts on water quality should reflect the risk of impacts on the achievement of the assigned water quality objective.

Currently no in-depth investigations have been completed to assign localised water quality objectives that are both realistic and relevant to Potts Hill Eastern Precinct site.

5.1.4 Adopted Water Management Objectives

Based on review of the above documentation the following objectives have been adopted for the preparation of a site stormwater management strategy for the Potts Hill Eastern Precinct development.

- Stormwater detention will be implemented to restrict 5, 20 & 100 year ARI post development flows to their corresponding pre-development levels (*all storm durations*).
- Stormwater quality treatment measures will be implemented for the subdivision to target sediments, nutrients, litter, hydrocarbons, grease and oil. The following water management objective will be achieved as a minimum.
 - 85% reduction in annual post development Total Suspended Solid (TSS) load;
 - 65% reduction in annual post development Total Phosphorous (TP) load;
 - 45% reduction in annual post development for Total Nitrogen (TN) load;
 - 90% reduction in annual post development for Gross Pollutant/litter load; and
 - Capture of majority of hydrocarbons/oils/grease generated by carparking areas/loading docks/highly trafficked areas.



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

6. HYDROLOGY

The hydrology of the site in question was assessed to determine any potential stormwater quantity impacts as a result of the proposed development. All hydrological analyses undertaken is in accordance with the discharge rates calculation method outlined in Australian Rainfall and Runoff (A.R.R.) 1987 (Ref. 6).

6.1 Sub-catchment

The site sub-catchment layout is included at **Appendix 3** - of this report.

6.2 RAFTS

The program RAFTS was used to model the sites hydrology. RAFTS is a non-linear rainfall/runoff program used to estimate peak flows for catchments, using actual storm events, or design rainfall data derived from *Australian Rainfall and Runoff (AR&R) (IEAust, 1987)* (Ref. 6). The XP-RAFTS model has been used extensively by authorities throughout Australia on both rural and urban catchments.

The site catchment was divided into a number of sub-catchments based on watershed boundaries and other critical factors such as site boundaries. Data collected for each sub catchment included catchment area, slope, percentage of impervious surfaces, rainfall loss rates and a surface roughness factor.

The RAFTS model separately routes the impervious and pervious sections of each sub-catchment, which is appropriate when modelling runoff from urban areas. The model was also used to route flows through storage (*i.e. retarding basins, dams*) to assess the flood mitigation benefits downstream of the storage.

For the purposes of this study the 5yr, 20yr, 100yr Average Recurrence Intervals (ARIs) design storm events ranging in storm duration from 15 minutes to 12 hours have been modelled.

6.2.1 Modelling Assumptions

The following assumptions have been adopted for the hydrologic modelling exercise;

- The stormwater runoff from all upstream catchments has been diverted around the lots so that these catchments do not drain into proposed on-site detention systems and WSUD treatment devices. This will result in more efficient detention and water quality treatment;
- The adopted pre-development percentage impervious fraction for the developable area of the five lots was set at zero (*ie all the sites were assumed to be in natural condition under the pre-development scenario*);



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POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

- The adopted post-development percentage impervious fraction for the developable area of the lots was set at 80% except for the Lot 101, which was assumed to be 60% (*ie based on a likely smaller development footprint*);
- The two access roads (*ie Road 1 and 2*) were excised from the lot areas and modelled separately (*assumed to be 80% impervious under developed conditions*); and
- The steep embankments to the east of the Lot 102, 103 and 104 were excised from the lot areas and modelled separately (*assumed to be 0% impervious under developed conditions*).

6.2.2 Model Parameters

The rainfall IFD data utilized in this investigation was taken from Bankstown City Council's engineering guideline (Ref. 3). The summary of the design IFD data is presented in **Table 6-1**.

Table 6-1 – IFD Data

Duration	2yr Intensity (mm/h)	50yr Intensity (mm/h)
1 hr	35.5	72
12 hr	7.6	15.1
72 hr	2.5	5.2

The rainfall loss method used in the RAFTS models were based on initial and continuing losses. The adopted initial and continuing losses are presented in **Table 6-2**. These were based on an assessment of the sites geotechnical conditions as well as guidance from ARR 87.

Table 6-2 – Rainfall Loss Parameters

	Pervious Areas	Impervious Areas
Initial Loss (IL) – Pre development	25 mm	2.5 mm
Continuing Loss (CL) – Pre development	5 mm	0 mm
Initial Loss (IL)-Post development	20 mm	2.5 mm
Continuing Loss (CL) – Post development	5 mm	0 mm

Surface roughness factors for impervious and pervious areas were based upon Worley Parsons' assessment of the likely state of the site under both pre and post development conditions. The adopted Mannings n values are as follows:

	Pre	Post
Impervious areas	n = 0.015	n = 0.015
Pervious areas	n = 0.05	n = 0.03

In order to check the RAFTS outputs, the simplistic Rational Method was used. The Rational Method



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calculations of 5 & 100 year ARI storm events were undertaken for Lot 101. The calculations undertaken by Worley Parsons indicated that the RAFTS output displays an acceptable correlation with the Rational Method approximations.

The comparison of the Rational Method and RAFTS results is included in **Table 6-3**.

Table 6-3 – Results Comparison (RAFTS Vs Rational Method)

	Unit	LOT 101	
		Rational Method	Rafts
Total Site area	ha	3.13	3.13
Pre-Development Conditions			
Percentage impervious	%	0	0
100 yr ARI Ex. Discharge rate	m ³ /s	1.00	0.99
5 yr ARI Ex. Discharge rate	m ³ /s	0.47	0.31
Developed Conditions (No Detention)			
Percentage impervious	%	60	60
100 yr ARI Dev Discharge rate	m ³ /s	1.77	1.36
5 yr ARI dev. Discharge rate	m ³ /s	0.85	0.69

6.2.3 Pre-development Condition RAFTS Modelling

All catchment characteristics adopted in the RAFTS model have been determined on the basis of site inspection, site survey and review of the available background information. Refer to the following **Table 6-4** for summary of the adopted catchment characteristics under the pre-development site conditions.

Table 6-4 –Pre-development Catchment Characteristics

Name	Catchment Area (ha)	Vectored Average Slope (%)	Impervious Fraction (%)
TG-LOT	2.49	5	0
TG-EXT	0.44	3	0
SW-EMB	0.10	10	0
SW-RD	0.19	1	0



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Name	Catchment Area (ha)	Vectored Average Slope (%)	Impervious Fraction (%)
SW-LOT	4.37	1	0
SW-EX	2.16	1	0
P-LOT	2.85	1	0
P-EMB	0.54	1	0
P-OUT	0.57	11	0
P-EXT	0.39	1	0
P-RD	0.55	1	0
R-LOT	0.94	2	0
R-EXT	0.36	2	0
EA1	1.84	2	0
EA2	0.53	2	0
TG-EMB	0.29	10	0
TG-RD	0.35	2	0
R-RD	0.31	4	0
R-EMB	0.39	10	0
Total	19.66		

A system wide approach has been adopted for the hydrological modelling at the Potts Hill site to ensure not only that individual site flows do not increase as a result of development but also that the combined impact of site generated flows, road generated flows, external catchment flows and flows from undevelopable lands (i.e. steep embankments) do not cause an increase in flows downstream of the site (*i.e. at Potts Park, Rookwood Road and Brunner Road*).

A RAFTS network was prepared to represent the site and upstream catchments under the pre development site conditions as illustrated in the following **Figure 3**. The detailed RAFTS catchment plan has also been presented in **Appendix 3** - .

The full range of storm frequencies and duration were analysed. For reporting purposes only the storms either side of the critical event are summarised in the following tables.



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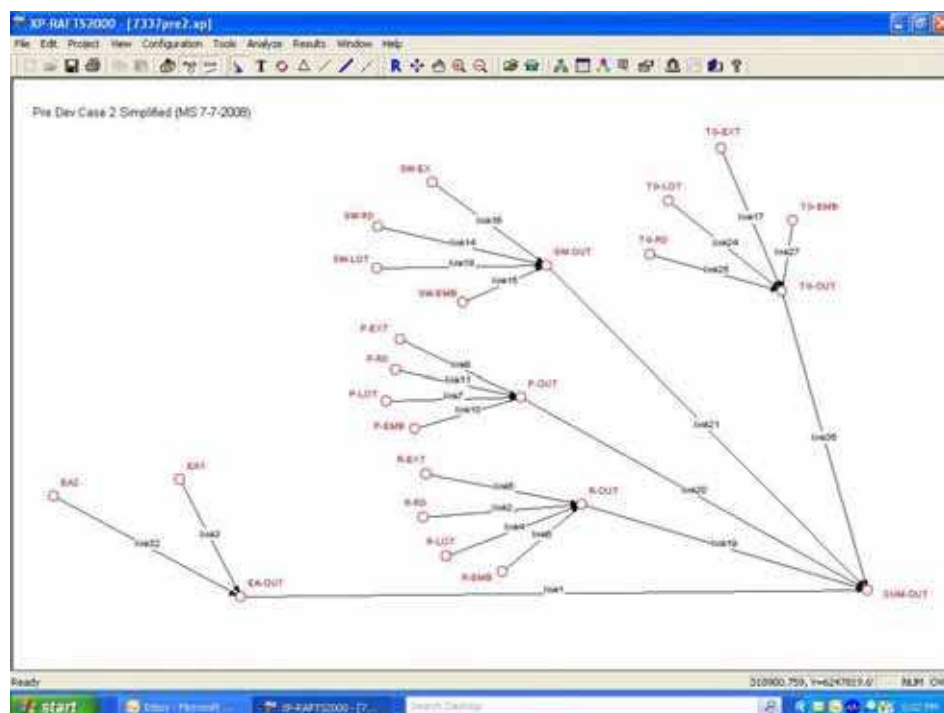


Figure 3 – Pre-development Condition RAFTS Network

The results in **Table 6-5** represent the hydrological conditions for the site and surrounding catchments under the pre-development scenario (*refer to **Appendix 5** for details*). These results compare well with those obtained using the simplified Rational Method.

The pre development critical storm duration is generally 120minutes. The critical storm peak 100yr ARI flow at the combined outlet (*i.e. Dum-Out*) from the site under pre development conditions is 3.6m³/s. This represents the combined flow at the three outlet points (*i.e. at Potts Park, Rookwood Road and Brunner Road*). The combined outflow hydrograph for the site under pre development conditions is illustrated in **Figure 4**.

The results in **Table 6-5** will be utilised as a base case for the detention modelling (*i.e. to set PSD's*).



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Table 6-5 – Rafts Pre Development Results (*Peak Flow m³/s*)

	RAFTS NODE										
Storm	DUM- OUT	EA- OUT	R- LOT	R- OUT	P- LOT	P-RD	P- OUT	SW- LOT	SW- OUT	TG- LOT	TG- OUT
100yr 90min	3.28	0.48	0.21	0.56	0.41	0.10	0.83	0.59	0.95	0.68	0.98
100yr 120min	3.55	0.50	0.22	0.58	0.43	0.11	0.85	0.61	0.99	0.74	1.08
100yr 180min	2.76	0.37	0.17	0.42	0.39	0.08	0.69	0.57	0.91	0.55	0.80
20yr 90min	1.96	0.30	0.13	0.32	0.24	0.06	0.53	0.34	0.55	0.42	0.60
20yr 120min	2.15	0.30	0.14	0.36	0.27	0.07	0.56	0.38	0.62	0.45	0.65
20yr 180min	1.90	0.27	0.11	0.24	0.26	0.06	0.47	0.37	0.59	0.32	0.46
5yr 90min	1.12	0.17	0.07	0.16	0.14	0.03	0.25	0.19	0.31	0.22	0.32
5yr 120min	1.23	0.18	0.08	0.17	0.16	0.04	0.28	0.21	0.35	0.23	0.33
5yr 180min	1.21	0.18	0.07	0.16	0.16	0.04	0.28	0.23	0.36	0.20	0.29

Note: 1. RAFTS Pre Development Model is 7337pre2.xp

2. Critical Storm shown in bold.



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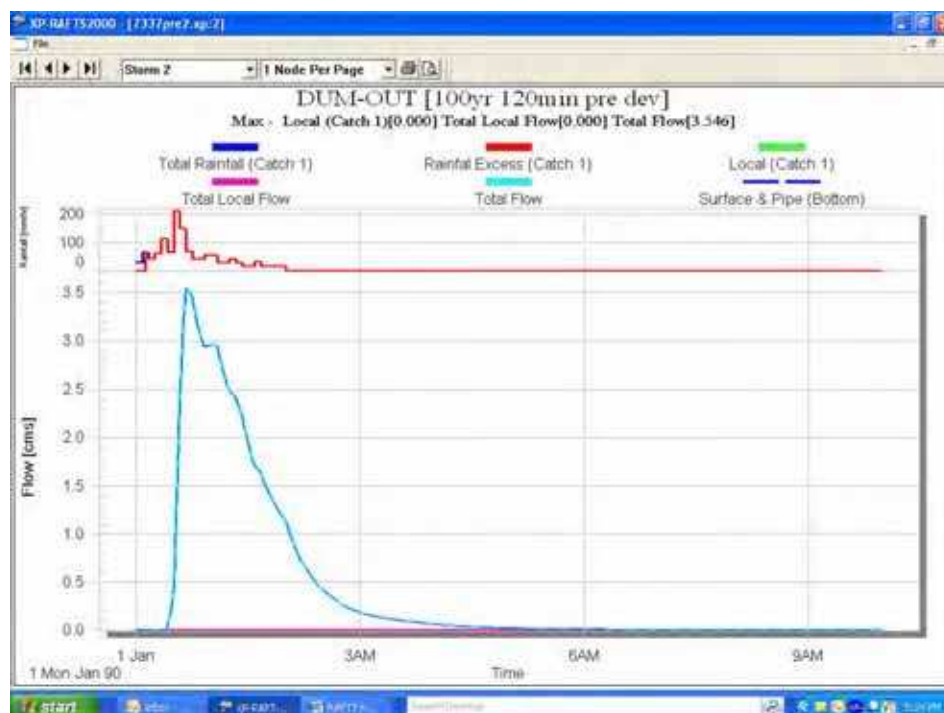


Figure 4 – Pre-development Hydrograph at Dummy Outlet

6.2.4 Proposed Condition (No Detention) RAFTS Modelling

Development on the site was represented by a change in impervious fraction in accordance with the proposed landuse change. **Table 6-6** summarises the change in impervious fraction for each RAFTS sub catchment.

Table 6-6 – Adopted Post Dev. Sub-Catchment Properties

SUB CATCHMENT NAME	TOTAL AREA (HA)	POST DEVELOPMENT IMPERVIOUS FRACTION	VECTORED AVERAGE SLOPE (%)
EA1	1.84	80	2
EA2	0.53	80	2
R-EMB	0.39	0	10
R-LOT	0.94	75	2
R-RD	0.31	80	4
R-EXT	0.36	0	2
P-EMB	0.54	0	10



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SITE SERVICES & STORMWATER MANAGEMENT REPORT

SUB CATCHMENT NAME	TOTAL AREA (HA)	POST DEVELOPMENT IMPERVIOUS FRACTION	VECTORED AVERAGE SLOPE (%)
P-LOT	2.85	75	1
P-RD	0.55	80	1
P-EXT	0.39	0	1
P-OUT	0.57	0	11
SW-EMB	0.1	0	10
SW-LOT	4.37	75	1
SW-RD	0.19	80	1
SW-EXT	2.16	0	1
TG-RD	0.35	80	2
TG-LOT	2.49	50	5
TG-EMB	0.29	0	10
TGEXT	0.44	0	3
TOTAL	19.66		

To assess the impact of modifying the pre-development land use of the site (*i.e. providing the proposed commercial development*), a proposed conditions (*no detention*) RAFTS model was constructed. The discharge rates obtained from this model has been presented in the **Table 6-7**.

Table 6-7 – Rafts Post Development (*No Detention*) Results (*Peak Flow m³/s*)

	RAFTS NODE										
STORM	DUM-OUT	EA-OUT	R-LOT	R-OUT	P-LOT	P-RD	P-OUT	SW-LOT	SW-OUT	TG-LOT	TG-OUT
100yr 90min	8.65	1.34	0.53	0.97	1.44	0.30	2.29	2.17	2.48	1.10	1.57
100yr 120min	7.69	1.24	0.47	0.84	1.34	0.28	2.00	2.05	2.28	0.95	1.33
100yr 180min	5.11	0.74	0.29	0.57	0.80	0.17	1.35	1.20	1.45	0.69	1.00
20yr 90min	6.48	1.04	0.40	0.71	1.13	0.24	1.69	1.73	1.91	0.80	1.13
20yr 120min	5.64	0.98	0.37	0.58	1.10	0.23	1.45	1.64	1.74	0.69	0.92



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	RAFTS NODE										
STORM	DUM- OUT	EA- OUT	R- LOT	R- OUT	P- LOT	P- RD	P- OUT	SW- LOT	SW- OUT	TG- LOT	TG- OUT
20yr 180min	3.78	0.57	0.22	0.43	0.61	0.13	1.02	0.93	1.07	0.49	0.69
5yr 90min	4.36	0.76	0.29	0.44	0.85	0.18	1.10	1.29	1.37	0.52	0.69
5yr 120min	3.89	0.74	0.27	0.38	0.82	0.17	0.99	1.24	1.29	0.51	0.63
5yr 180min	2.43	0.40	0.15	0.26	0.44	0.09	0.63	0.67	0.74	0.29	0.40

Note: 1. RAFTS Pre Development Model is 7337dev2.xp

2. Critical Storm shown in bold.

The results in **Table 6-7** represent the hydrological conditions for the site and surrounding catchments under the post development (*no detention*) scenario. These results also compare well with those obtained using the simplified Rational Method.

The post development (*no detention*) critical storm duration has decreased as expected to approximately 90 minutes. The critical storm peak 100yr ARI flow at the combined outlet (i.e. Dum-Out) from the site under post development (no detention) conditions is 8.7m³/s (i.e. an increase of approximately 140%). This represents the combined flow at the three outlet points without detention (i.e. at *Potts Park, Rookwood Road and Brunner Road*). The combined outflow hydrograph for the site under post development (no detention) conditions is illustrated in the following **Figure 5**.

6.2.5 Proposed Condition (*With Detention*) RAFTS Modelling

A third RAFTS model was prepared to assess the reduction in peak flows from post development level to its pre-development level via implementation of the proposed detention systems within the Eastern Precinct.

A RAFTS network was developed as illustrated in **Figure 6**.



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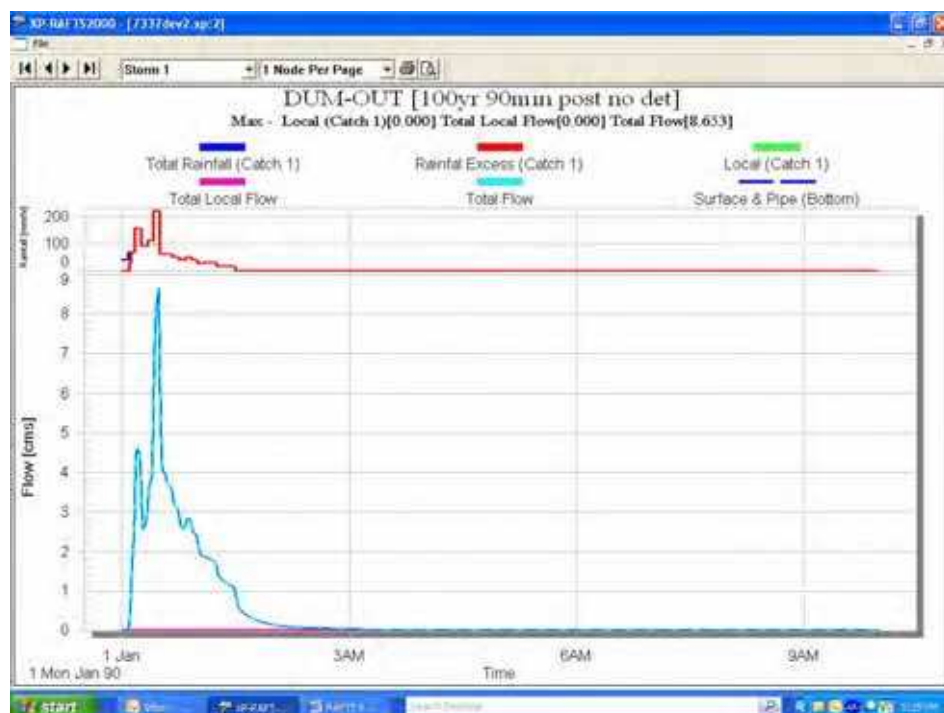


Figure 5 – Post-development (*No Detention*) Hydrograph at Dummy Outlet

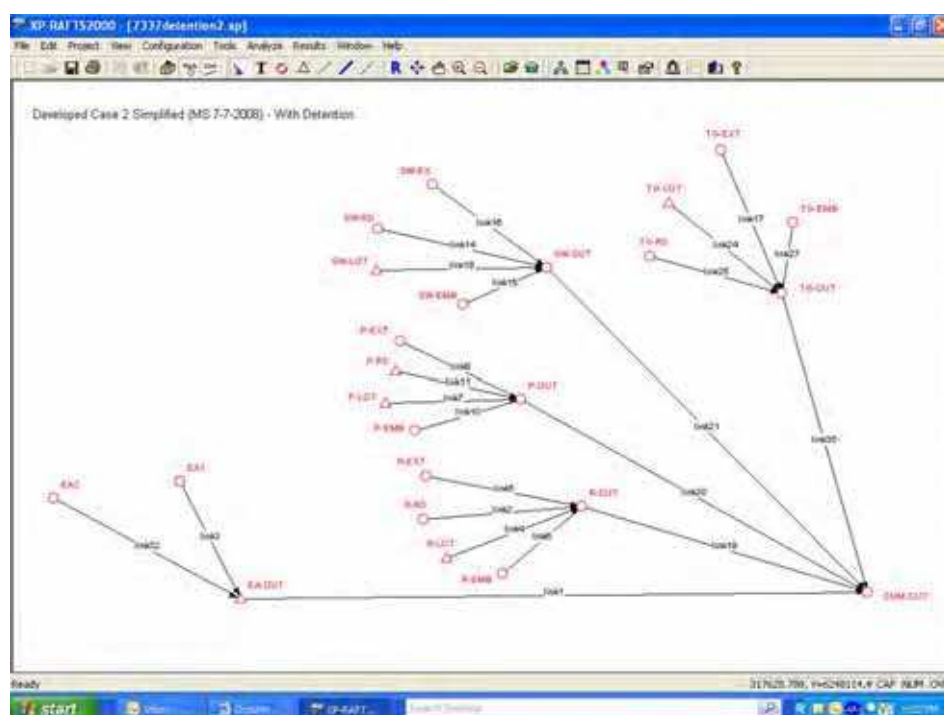


Figure 6 – Post-development Condition (*With Detention*) RAFTS Network



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To cater for the increase of flows from the site as a result of the proposed development stormwater detention systems are proposed to be implemented on each lot as well as within Public Road #2. These detention systems have been sized to ensure that the system wide flows do not increase beyond pre development levels. In RAFTS this was modelled by introduction of detention storages incorporating multiple outlet controls and high early discharge. The outlet configurations were determined through iteration to optimise the storage volumes required. **Table 6-8** provides a summary of the resultant SSR and PSD values required to achieve the system wide objectives (*i.e. post development flows to pre development levels for all storm frequencies and durations*).

Table 6-8 – Rafts SSR and PSD Requirements

Site	Total Area (ha)	Developable Area (ha)	Total Detention Volume (m3)	SSR m3/ha	5yr PSD (m3/s)	20yr PSD (m3/s)	100yr PSD (m3/s)
LOT 105	2.37	2.37	748.3	315.7	0.17	0.27	0.48
LOT 104	1.64	0.94	435.0	462.8	0.016	0.08	0.20
LOT 103	3.94	2.85	1,441.0	505.6	0.055	0.18	0.30
Road 2 adjacent to LOT 103	0.55	0.55	186.0	338.2	0.03	0.065	0.10
LOT 102	4.67	4.37	1,719.0	393.4	0.18	0.32	0.55
LOT 101	3.13	2.49	607.0	243.0	0.16	0.28	0.60

It should be noted that the proposed detention systems for the subdivision are generally located within the lots, however a public based detention system is also proposed within Road 2 adjacent to the LOT 103. This public based system is required to control increase in flows as a result of the increase in impervious area within the road corridor. The remaining roads do not have their own detention systems, rather the detention basins within adjacent lots 101, 102 and 103 have been increased marginally in size to account/offset for the roads.

It is anticipated that the detention systems within each lot are likely to consist of any number of configurations from single below ground structures to combinations of above and below ground systems. Detention may also form part of rainwater storage system and WSUD measures. The critical outcome is that the combined total volume provided is equal to or greater than that shown in **Table 6-8** and that the combined peak outflows do not increase beyond the PSD values shown in **Table 6-8**.



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Table 6-9 - Rafts Post Development (With Detention) Results (*Peak Flow m³/s*)

STORM	RAFTS NODE										
	DUM- OUT	EA- OUT #	R- LOT#	R- OUT	P- LOT#	P- RD#	P- OUT	SW- LOT#	SW- OUT	TG- LOT#	TG- OUT
100yr 90min	3.09	0.48	0.17	0.46	0.30	0.10	0.72	0.55	0.91	0.56	0.82
100yr 120min	3.11	0.48	0.19	0.44	0.30	0.10	0.77	0.55	0.93	0.55	0.78
100yr 180min	2.66	0.37	0.15	0.31	0.30	0.10	0.62	0.55	0.90	0.37	0.59
20yr 90min	2.03	0.27	0.08	0.32	0.18	0.065	0.49	0.32	0.54	0.28	0.60
20yr 120min	2.01	0.27	0.08	0.29	0.18	0.065	0.50	0.32	0.56	0.28	0.56
20yr 180min	1.84	0.27	0.08	0.22	0.18	0.065	0.42	0.32	0.55	0.28	0.43
5yr 90min	1.12	0.17	0.016	0.16	0.055	0.03	0.25	0.18	0.31	0.16	0.32
5yr 120min	1.16	0.17	0.016	0.16	0.055	0.03	0.28	0.18	0.32	0.16	0.31
5yr 180min	1.05	0.17	0.016	0.12	0.055	0.03	0.21	0.18	0.32	0.16	0.27

Note: 1. RAFTS Pre Development Model is 7337detention2.xp
 2. Critical Storm shown in bold.
 3. # represents outflows from basin.

The results in **Table 6-9** represent the hydrological conditions for the site and surrounding catchments under the post development (*with detention*) scenario.

The post development (*with detention*) critical storm duration has moved back slightly as expected to between 90 and 120minutes. The critical storm peak 100yr ARI flow at the combined outlet (i.e. Dum-Out) from the site under post development (*with detention*) conditions is 3.1m³/s (i.e. *marginally less than pre development conditions*). This represents the combined flow at the three outlet points (i.e. at Potts Park, Rookwood Road and Brunner Road) when detention is implemented on the Potts Hill EP. The combined outflow hydrograph for the site under pre development conditions is illustrated in **Figure 7**.



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Table 6-9 also shows that for all storm events the pre development objective is achieved (*i.e. no impact on receiving drainage systems*).

Figure 7 to Figure 12 show the critical 100yr ARI outflow hydrographs from each site detention system required to achieve the above results.



Figure 7 – EA Site 100yr ARI Post Development (With Detention) Hydrograph



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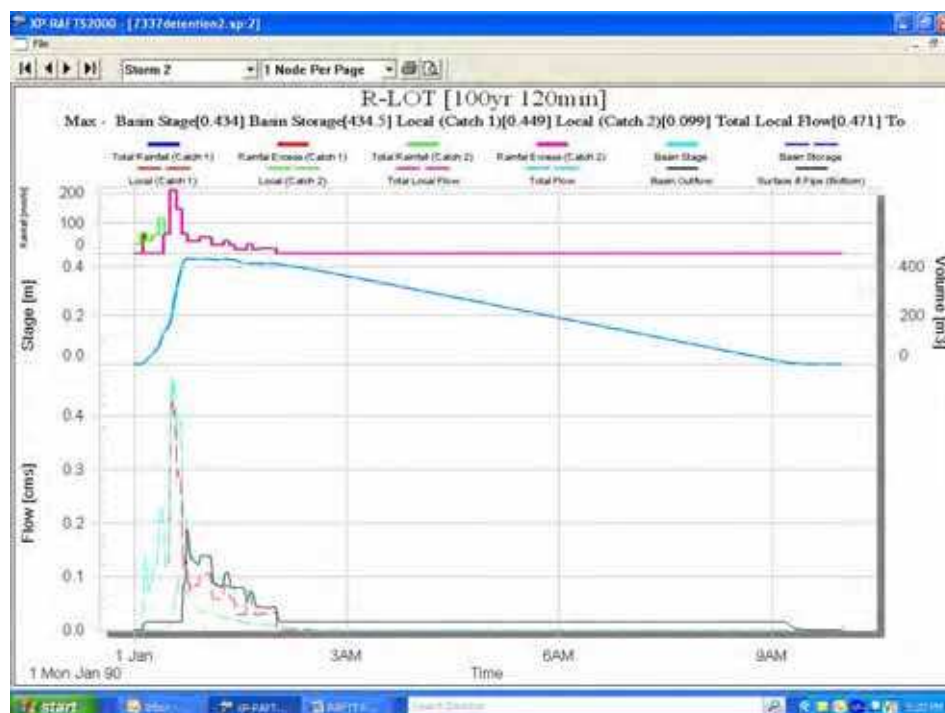


Figure 8 – Lot 104 100yr ARI Post Development (With Detention) Hydrograph



Figure 9 – Lot 103 100yr ARI Post Development (With Detention) Hydrograph



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Figure 10 – Road 1 (Outside Lot 103) 100yr ARI Post Development (With Detention) Hydrograph



Figure 11 – Lot 102 100yr ARI Post Development (With Detention) Hydrograph



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Figure 12 – Lot 101 100yr ARI Post Development (With Detention) Hydrograph

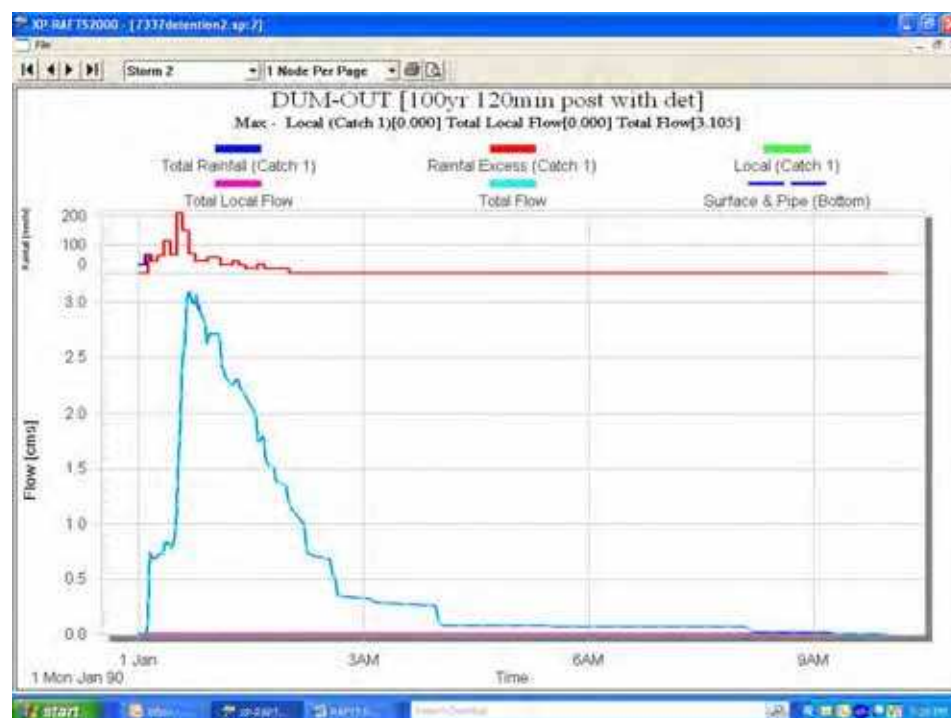


Figure 13 –100yr ARI Post Development (With Detention) Hydrograph at Dummy Outlet



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Figure 13 shows the critical 100yr ARI outflow hydrographs from the Dummy outlet. It ensures that the detention requirement for overall site has also been achieved. It indicates the post development flow rate at this dummy outlet is not greater than its pre-development level.



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7. STORMWATER QUALITY MANAGEMENT STRATEGY

7.1 CONSTRUCTION PHASE

During bulk earthworks and construction of internal roads and associated infrastructure for the proposed development, sediment and erosion control facilities will be designed and constructed/installed in accordance with Council's specifications and with the requirements of the publication "*Managing Urban Stormwater – Soils and Construction*" (i.e. the Blue Book).

A sediment and erosion control plan will be prepared prior to construction, outlining the strategies proposed to prevent excessive pollutant loads being exported from the site in runoff during and immediately following construction.

7.2 POST DEVELOPMENT PHASE

The proposed water quality management system for the ultimate conditions consists of the following elements:

- use of rainwater storage tanks for reuse in toilet flushing, irrigation and other non potable uses;
- use of bio-retention systems;
- installation of Gross Pollutant Traps (GPTs) and litter baskets; and
- use of oil and grit separators to treat runoff from highly trafficked areas.

The software package developed by the CRC for Catchment Hydrology termed "MUSIC" (*Model for Urban Stormwater Improvement Conceptualisation*) was used to assess the effectiveness of the proposed "treatment train" compared with two other land use scenarios.

The three land use scenarios analysed were as follows:

- Pre development conditions;
- Post development conditions with no treatment measures; and
- Post development conditions with treatment measures.

Details of the MUSIC modelling exercise (*including results*) are included at **Appendix 6** - and summarised in the following sections.

Water quality control will be undertaken using a treatment train approach, the first step of which would be the use of rainwater tanks. The rainwater tanks will act to intercept and re-use rainwater for toilet flushing, irrigation and other non potable uses. The reduction in stormwater runoff volume achieved through re-use will result in a reduction in pollutant load exported to the catchment as well as minimising potable water demand for the development.



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In addition to rainwater tanks, gross pollutant trap, bio-retention systems and a proprietary water quality device (*for oil, grease and hydrocarbon*) would be utilised in order to reduce pollutant loads discharging from the site.

7.3 ASSESSMENT METHODOLOGY (MUSIC)

To ensure the achievement of the objectives outlined in **Section 5.1**, a MUSIC model has been established for the site.

MUSIC is a continual-run conceptual water quality assessment model developed by the Cooperative Research Centre for Catchment Hydrology (CRCCH). MUSIC can be used to estimate the long-term annual average stormwater volume generated by a catchment as well as the expected pollutant loads. It is able to conceptually simulate the performance of a group of stormwater treatment measures (*treatment train*) to assess whether a proposed water quality strategy is able to meet specified water quality objectives.

MUSIC was chosen for this investigation because it has the following attributes:

- it can account for the temporal variation in storm rainfall throughout the year;
- modelling steps can be as low as 6 minutes to allow accurate modelling of treatment devices;
- it can model a range of treatment devices;
- it can be used to estimate pollutant loads at any location within the catchment; and
- it is based on logical and accepted algorithms.

7.3.1 Rainfall

Rainfall data used in the MUSIC modelling (*all scenarios*) was sourced from the Bureau of Meteorology (BOM). Rainfall gauges located in the vicinity of the site along with their long term annual averages are listed below:

- Seven Hills (*Stn 067026*), 54 years - 915mm/yr;
- Parramatta North (*Stn 066124*), 42 years – 959mm/yr; and
- Prospect Dam (*Stn 067019*), 42years - 870mm/yr;

The closest BOM controlled Pluviograph record for the site is generated by Parramatta North (*Stn 068131*). This rain gauge is still operating and has rainfall records in 6 minute increments dating back to 1965. The long term annual average rainfall for this gauge is 959mm.

Based on the quality of the data and the stations proximity to the site, six minute rainfall data was adopted from the Parramatta North station for a range of rainfall years representing a mix of average, wet and dry years for the region (*Jan 1990 to Dec. 1994 - 5 years*). This range of rainfall generated an annual average of 875mm, which is in line with the long term average for the region.



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7.3.2 Evaporation

Monthly areal Potential Evapotranspiration values were obtained for the site from 'Climate Atlas of Australia, Evapotranspiration' (*Bureau of Meteorology, 2001*) and are shown in **Table 7-1**.

Table 7-1 – Monthly Areal Potential Evapotranspiration

Month	Areal Potential Evapotranspiration (mm)
January	175
February	135
March	125
April	80
May	58
June	45
July	45
August	60
September	89
October	125
November	151
December	165

7.3.3 Soil Data and Model Calibration

The soil properties recommended by DECC for Western Sydney have been adopted for this investigation. The data used in MUSIC modelling has been presented in **Table 7-2**. These values have been entered into the Potts Hill model and resulted in a pre-development & developed volumetric run-off co-efficient of 0.28 and 0.66 respectively. These volumetric run-off coefficients are within the anticipated ranges for the specified percentage imperviousness. Therefore the prescribed soil properties are behaving as anticipated.

Table 7-2 – Soil data

	Units	Post Development	Pre Development
Impervious area parameters			
Rainfall threshold	mm/day	1.4	1.4
Pervious area parameters			



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	Units	Post Development	Pre Development
Soil storage capacity	mm	170	210
Initial storage	% of capacity	30	30
Field capacity	mm	70	80
Infiltration capacity coefficient – a		210	175
Infiltration capacity coefficient – b		4.7	3.1
Groundwater properties			
Initial depth	mm	10	10
Daily recharge rate	%	50	35
Daily base flow rate	%	4	20
Daily deep seepage rate	%	0	0

7.3.4 EMC Values

The EMC values outlined in **Table 7-3** have been adopted in MUSIC modelling. These values were determined by the CRCCH (Ref. 7) following an extensive literature review by Duncan et al 1999, drawing on data from throughout Australia, but particularly from studies within NSW.

It is important to note that some of these recommended values differ significantly to the 'default' values within MUSIC. These EMC values for each of the described land uses in **Table 7-3** have been adopted for all MUSIC modelling.

Table 7-3 – EMC Values

Land use	Storm Flow						Base Flow					
	TSS		TP		TN		TSS		TP		TN	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	<i>(all values expressed as log₁₀ mg/l)</i>											
General urban												
Residential												
Industrial	2.15	0.32	-0.60	0.25	0.30	0.19	1.20	0.17	-0.85	0.19	0.11	0.12
Commercial												



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Land use	Storm Flow						Base Flow					
	TSS		TP		TN		TSS		TP		TN	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	<i>(all values expressed as log₁₀ mg/l)</i>											
Rural*	1.95	-	-0.66	-	0.30	-	1.15	-	-1.22	-	-0.05	-
Roads	2.43	0.32	-0.30	0.25	0.34	0.19	---	---	---	---	---	---
Roofs	1.30	0.32	-0.89	0.25	0.30	0.19	---	---	---	---	---	---
Forest/Natural	1.60	0.32	-1.10	0.25	-0.05	0.19	0.78	0.17	-1.52	0.19	-0.52	0.12

*Rural EMC values taken from Chapter 2 – Review of Stormwater Quality and Runoff, CRC for Catchment Hydrology, Oct.2003

7.4 Pre Development Conditions

The pre development scenario for the EP site was modelled in MUSIC (refer **Figure 14**). The EMC values adopted in this model were for the forested land use with zero percent impervious fraction, refer to **Table 7-3** for detailed EMC values adopted in this report.

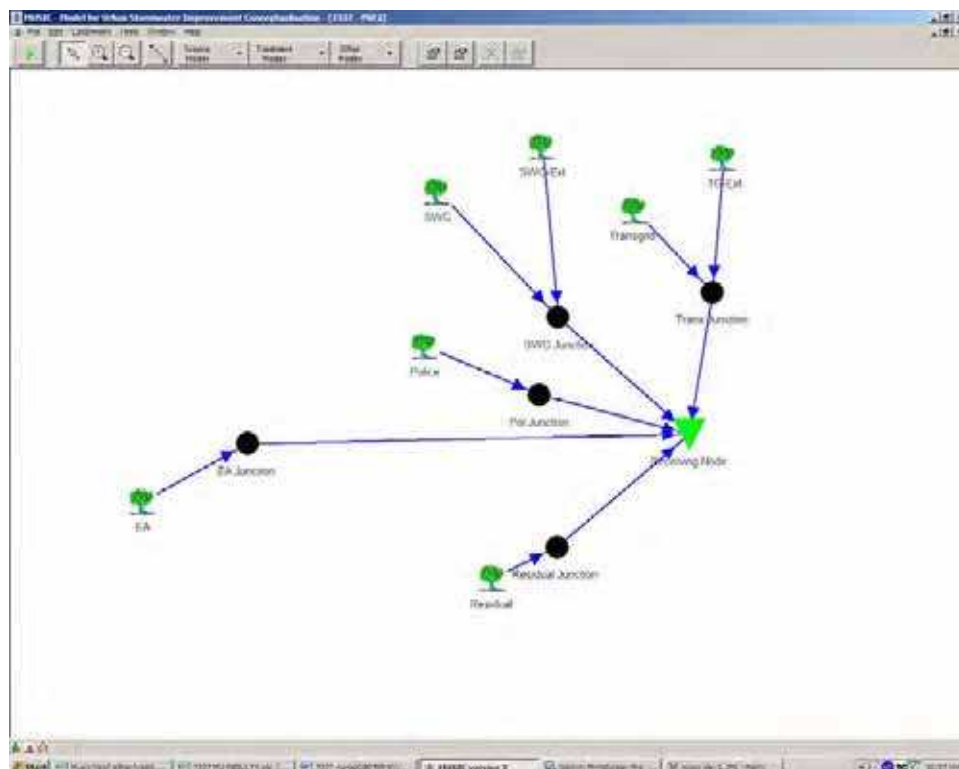


Figure 14 – Pre-development MUSIC network diagram



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The resultant pre development mean annual pollutant loads for each sub-catchment is presented in Table 7-11.

7.5 Proposed Development No-Treatment Conditions

The proposed scenario with no treatment was modelled to enable the impact of urbanisation on pollutant loads for each sub-catchment has been considered. The percentage impervious adopted in the entire site was 80% in the developed model except in Lot 101. It should be noted that the proposal for the development of Lot 101 may only for Substation. Therefore the site will have less impervious area as compared to all other lots. The percentage impervious assumed for Lot 101 was 60%. The Post development MUSIC network diagram without any treatment devices has been presented in the following Figure 15.

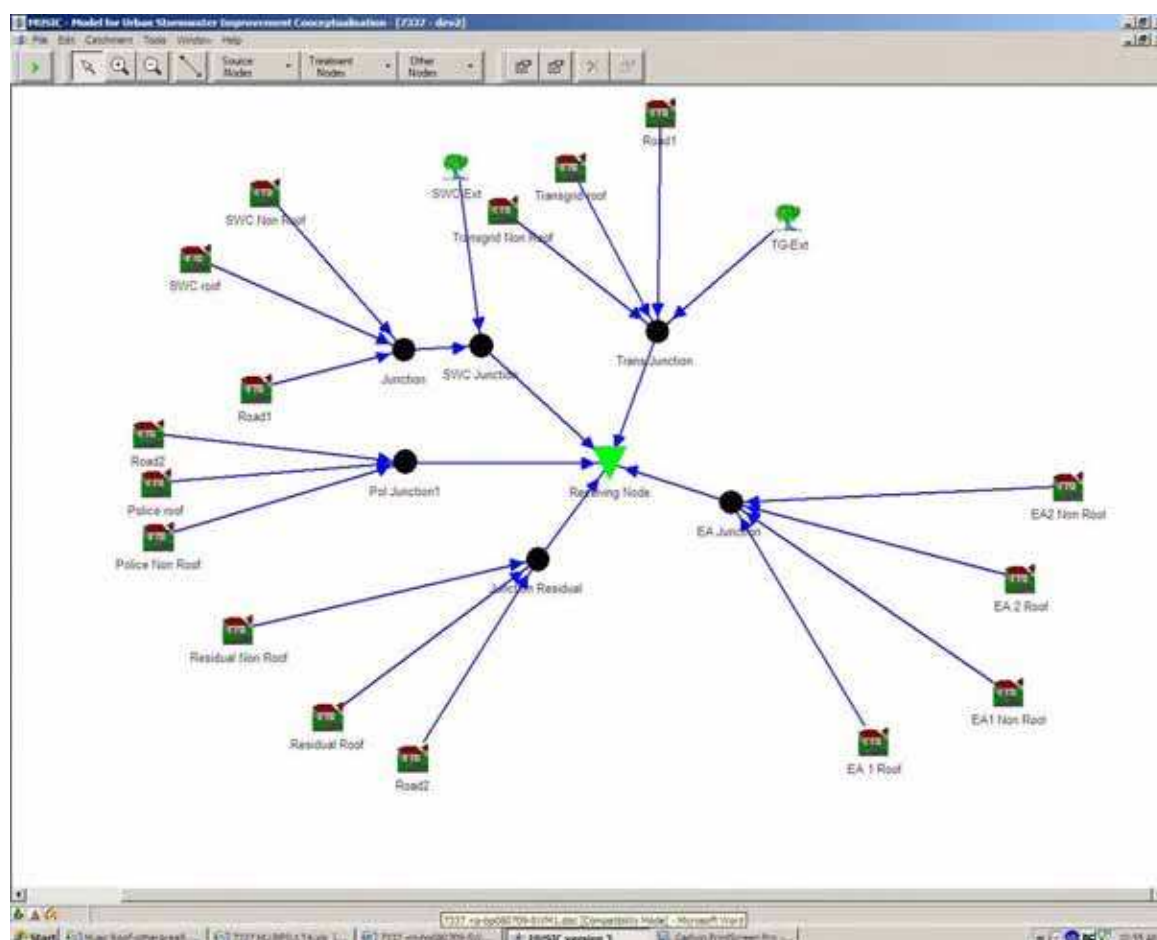


Figure 15 - Post development MUSIC network diagram (No Treatment)



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7.6 Proposed Development with Treatment Conditions

7.6.1 Catchment Conditions

A post development with treatment MUSIC layout was also prepared for this investigation. This diagram shows that the proposed treatment measures including rainwater tank, bio-retention systems and GPT's. The catchment breakdown of the Potts Hill Eastern Precinct (*including treatment devices*) is shown in **Table 7-4 & Appendix 4**.

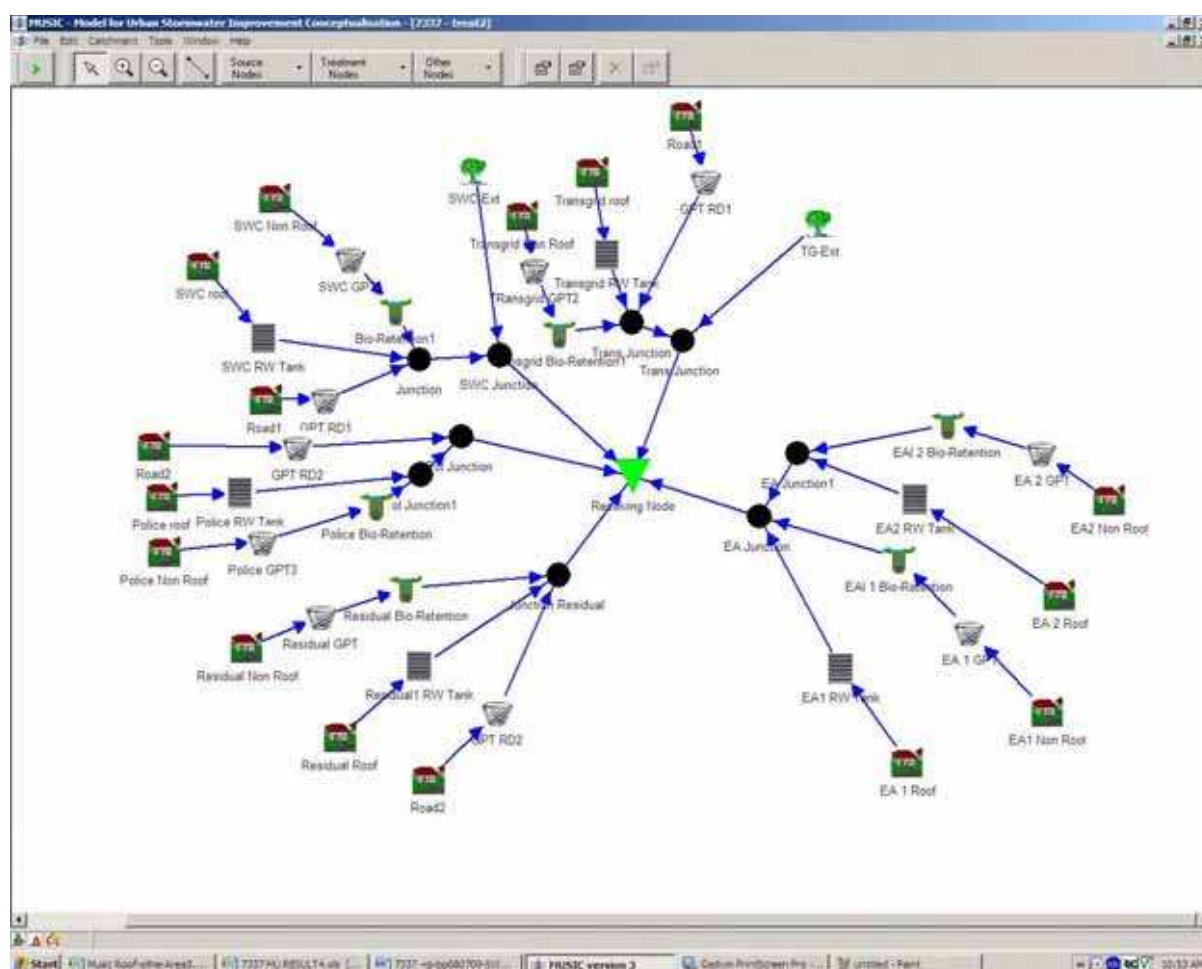


Figure 16 - Post development MUSIC network diagram (with Treatment)

From the above **Figure 16**, it has been assumed that the upstream catchments are diverted around the site. This will result in optimal sized WQ devices in all sites. A summary of the proposed developable area and associated WQ devices required for individual lot has been presented in the following **Table 7-4**.



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Table 7-4 Site Details & Proposed WQ Devices Summary

Site Name	Total Area (Ha)	Developable Area (Ha)	GPT	Bio-Retention	Rainwater Tank	Oil/grease separator
Lot 101	3.13	2.78	Yes	Yes	Yes	Yes
Lot 102	4.67	4.52	Yes	Yes	Yes	Yes
Lot 103	3.93	3.40	Yes	Yes	Yes	Yes
Lot 104	1.64	1.33	Yes	Yes	Yes	Yes
Lot 105	2.36	2.36	Yes	Yes	Yes	Yes

7.6.2 Proposed WSUD Treatment Measures Assumption

7.6.3 Rainwater Tanks

Rainwater tanks help reduce pollutant export into downstream drainage system by collecting and storing rainwater for reuse. Furthermore, rainwater tanks will assist in the reduction of potable water demand (*refer to Section 8.1 for more details*).

7.6.4 Gross Pollutant Traps

It is proposed to install Gross Pollutant Traps (GPTs). GPTs would capture litter, debris, coarse sediment, oils and greases. While the pollutant capture efficiency of various traps may vary, the paper "Removal of Suspended Solids and Associated Pollutants by a Gross Pollutant Trap" from the site is in accordance with the following capture rates:

- gross pollutants majority;
- total suspended sediments up to 70%;
- total phosphorous up to 30%; and
- total nitrogen 13%.

7.6.5 Bio-retention Systems/Rain Gardens

Bio-retention systems typically consist of a swale or above ground depression containing landscaping of native grasses, shrubs and trees underlain by an infiltration area and associated under drain. A typical bio-retention swale consists of 150mm sandy loam mixed topsoil, 1.0m filter media such as sandy loam, 150mm gravel transition layer under the filter media and subsoil drain at the base to collect filtered water through the media. The purpose of bio-retention swale is to provide a filtering effect when the runoff flows on the surface through the vegetation to remove pollutants in the runoff. Further treatment is achieved by filtering through the filter media and biological action due to growth on the gravel.



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7.6.6 Configuration of Treatment Measures

Each lot in Potts Hill Eastern Precinct will have a combination of water quality treatment devices such as rainwater tanks, bio-retention systems, GPT's and Oil and grease separators. These devices form a treatment train. The general configuration of these devices (*schematic diagram*) has also been shown in **Appendix 4**.

The configuration of the combined lot base bio-retention systems which has been utilized in the MUSIC model is presented in the following **Tables (7-5 to 7-10)**.

Table 7-5 – Assumed Configuration of Bio-Retention Systems on Lot 102

Inlet Properties	
Low Flow By-Pass (m ³ /s)	0
High Flow By-Pass (m ³ /s)	100
Storage	
Extended Detention Depth	0.5
Surface Area (m ²) - 5% of Catchment (approx.)	2,285
Seepage Loss (mm/hr)	3.3
Infiltration	
Filter Area (m ²) - 2.5% of Catchment (approx.)	1,143
Filter Depth (m)	1
Filter Particle Effective Diameter (mm)	0.5
Saturated Hydraulic Conductivity (mm/h)	100
Outlet	
Overflow Weir Width (m)	2

Table 7-6 – Assumed Configuration of Bio-Retention Systems on Lot 103

Inlet Properties	
Low Flow By-Pass (m ³ /s)	0
High Flow By-Pass (m ³ /s)	100
Storage	
Extended Detention Depth	0.5
Surface Area (m ²) - 5% of Catchment (approx.)	1,700
Seepage Loss (mm/hr)	3.3
Infiltration	



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SITE SERVICES & STORMWATER MANAGEMENT REPORT

Filter Area (m ²) - 2.5% of Catchment Area	850
Filter Depth (m)	1
Filter Particle Effective Diameter (mm)	0.5
Saturated Hydraulic Conductivity (mm/h)	100
Outlet	
Overflow Weir Width (m)	2

Table 7-7 – Assumed Configuration of Bio-Retention Systems on Lot 101

Inlet Properties	
Low Flow By-Pass (m ³ /s)	0
High Flow By-Pass (m ³ /s)	100
Storage	
Extended Detention Depth	0.5
Surface Area (m ²) - 5% of Catchment (approx.)	1,390
Seepage Loss (mm/hr)	3.3
Infiltration	
Filter Area (m ²) - 2.5% of Catchment Area	695
Filter Depth (m)	1
Filter Particle Effective Diameter (mm)	0.5
Saturated Hydraulic Conductivity (mm/h)	100
Outlet	
Overflow Weir Width (m)	2

Table 7-8 – Assumed Configuration of Bio-Retention Systems on Lot 104

Inlet Properties	
Low Flow By-Pass (m ³ /s)	0
High Flow By-Pass (m ³ /s)	100
Storage	
Extended Detention Depth	0.5
Surface Area (m ²) - 5% of Catchment (approx.)	665
Seepage Loss (mm/hr)	3.3



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Infiltration	
Filter Area (m ²) - 2.5% of Catchment Area	333
Filter Depth (m)	1
Filter Particle Effective Diameter (mm)	0.5
Saturated Hydraulic Conductivity (mm/h)	100
Outlet	
Overflow Weir Width (m)	2

Table 7-9 – Assumed Configuration of Bio-Retention Systems on Lot 105 (west)

Inlet Properties	
Low Flow By-Pass (m ³ /s)	0
High Flow By-Pass (m ³ /s)	100
Storage	
Extended Detention Depth	0.5
Surface Area (m ²) - 5% of Catchment (approx.)	920
Seepage Loss (mm/hr)	3.3
Infiltration	
Filter Area (m ²) - 2.5% of Catchment Area	460
Filter Depth (m)	1
Filter Particle Effective Diameter (mm)	0.5
Saturated Hydraulic Conductivity (mm/h)	100
Outlet	
Overflow Weir Width (m)	2

Table 7-10 – Assumed Configuration of Bio-Retention Systems on Lot 105 (east)

Inlet Properties	
Low Flow By-Pass (m ³ /s)	0
High Flow By-Pass (m ³ /s)	100
Storage	
Extended Detention Depth	0.5
Surface Area (m ²) - 5% of Catchment (approx.)	260



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Seepage Loss (mm/hr)	3.3
Infiltration	
Filter Area (m ²) - 2.5% of Catchment Area	130
Filter Depth (m)	1
Filter Particle Effective Diameter (mm)	0.5
Saturated Hydraulic Conductivity (mm/h)	100
Outlet	
Overflow Weir Width (m)	2

7.6.7 Treatment Train Performance

The MUSIC model was used to test the performance of the proposed runoff treatment measures for a range of rainfall conditions over a five year period. The results for the proposed treatment measures are summarised in **Table 7-11**.

Table 7-11 – WSUD Performance Summary

Music model	Location	Pollutant Loads from various catchments				
		Flow	TSS	TP	TN	GP
		(ML/yr)	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
Pre development	TRANS JUNCTION	9.02	184	0.461	4.98	0
Developed (no treat)	TRANS JUNCTION	18.3	1930	4.26	33.8	450
Developed (with treat)	TRANS JUNCTION	14.4	249	1.66	16.8	2.56
% Reduction	TRANS JUNCTION	21.2	87.1	61.1	50.2	99.4
Pre development	SWC JUNCTION	16.4	334	0.839	9.06	0
Developed (no treat)	SWC JUNCTION	35	3490	7.12	62.1	795
Developed (with treat)	SWC JUNCTION	28.9	335	2.25	29.4	1.28
% Reduction	SWC JUNCTION	17.3	90.4	68.4	52.6	99.8
Pre development	POL JUNCTION	9.79	199	0.5	5.41	0
Developed (no treat)	POL JUNCTION	25.4	3250	6.58	50.5	669
Developed (with treat)	POL JUNCTION	20.9	388	2.5	25.2	4.52



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SITE SERVICES & STORMWATER MANAGEMENT REPORT

Music model	Location	Pollutant Loads from various catchments				
		Flow	TSS	TP	TN	GP
		(ML/yr)	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
% Reduction	POL JUNCTION	17.8	88	62	50	99.3
Pre development	RESIDUE JUNCTION	4.09	83.2	0.209	2.26	0
Developed (no treat)	RESIDUE JUNCTION	10.6	1450	2.93	21.2	280
Developed (with treat)	RESIDUE JUNCTION	8.84	203	1.22	11.1	2.64
% Reduction	RESIDUE JUNCTION	16.8	85.9	58.3	47.7	99.1
Pre development	EA JUNCITON	5.88	120	0.3	3.25	0
Developed (no treat)	EA JUNCITON	15.2	1640	3.33	29.9	402
Developed (with treat)	EA JUNCITON	12.1	86.3	0.866	13.1	0
% Reduction	EA JUNCITON	20.6	94.8	74	56.4	100
Pre development	RECEIVE NODE	45.2	920	2.31	25	0
Developed (no treat)	RECEIVE NODE	105	11800	24.2	197	2590
Developed (with treat)	RECEIVE NODE	85.2	1260	8.5	95.6	11
% Reduction	RECEIVE NODE	18.5	89.3	64.9	51.6	99.6

The results presented in the above Table has indicated that the WSUD devices proposed for Potts Hill Eastern Precinct meet the Water Quality objectives presented in **Section 5** and in particular the requirements outlined in the Department of Environment and Climate Change (DECC) manual (Ref. 4).

7.7 Volumetric Runoff Coefficients

The volumetric runoff coefficient represents the proportion of rainfall across a catchment that is not intercepted or infiltrated. Typically, the volumetric runoff coefficient is dependent upon the soil properties within the defined catchment. The soil properties implemented for the MUSIC modelling are presented in **Table 7-2**



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The impact of urbanisation, and proposed treatment measures on the volumetric run-off coefficients in a representative sub-catchment is summarised in **Table 7-12**.

Table 7-12 – Volumetric Runoff Coefficient Summary

Sub-Catchment	Volumetric Runoff Coefficient
Pre-development	0.28
Proposed No Treatment	0.66
Proposed With Treatment	0.54

The variation in volumetric runoff coefficients follows typical behaviour. The impact of urbanisation (ie the introduction of large impervious areas on the industrial lots) results in an increased runoff volume. However, the introduction of treatment measures such as rainwater tanks, bio-retention systems, and detention basins, results in a reduction in the runoff volumes.

7.8 Maintenance of Water Quality Control Measures

The recommended maintenance program for the water quality control measures to be implemented in the Eastern Precinct would consist of the following:

- Periodic (6 monthly) inspection and removal of any gross pollutants & coarse sediment that is deposited in the bio-retention systems and replacement of vegetation as necessary;
- Periodic (3 monthly) and episodic (post storm greater than 1 yr ARI) inspection and removal of trapped pollutants from all GPTs/litter baskets; and
- Periodic (annually) inspection (and flushing if required) of the bio-retention systems.
- Regular maintenance of the oil and grease separator includes the removal of the pollutants that are collected (build up) in the device. In order to estimate the frequency of the maintenance of such device, Manufacturer's recommendation as well as volume of the pollutants that are likely to be collected need to be assessed on a site by site basis.



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8. SUSTAINABILITY / REUSE

A key objective of the Eastern Precinct water cycle management strategy is to minimise the potable water demands for the proposed development.

The proposed water related sustainability strategy for the Potts Hill Eastern Precinct includes:

- Reduced demand through the implementation of water savings devices;
- Rainwater harvesting; and
- Introduction of recycled water (ie a third pipe solution).

A layout plan of the Sydney Water lot (Lot 102) has been prepared by James Taylor and Associates. (Ref. 2). This plan has been utilized for determining the indicative proportion of future roof area & rain water tank volume for the individual lots. Once the detailed information about the each individual lot is available, it is recommended to undertake further calculation for sizing of rainwater tank storage.

8.1 Rainwater Harvesting

The implementation of rainwater harvesting is discussed in **Section 7.6.3**. It is proposed that rainwater tanks will service non-potable use such as toilet flushing, garden irrigation, wash down areas, fire fighting test water and potentially the hot water demand for individual lots within Eastern Precinct. When rainwater tanks are empty, they will be topped up by mains water supply.

It should be noted that the daily re-use rate of rainwater that is collected in the rainwater tanks has been entered in MUSIC program on the basis of our past experience in similar projects. The actual demand can be estimated by water balance analysis. Due to lack of information such as number of occupants, total roof area etc our first estimate is preliminary only (*ie to be firmed up for individual lots once details of the developments are better defined*).

Refer to following **Table 8-1** for a summary of the rainwater harvesting features incorporated in our MUSIC modelling.

Table 8-1 – Summary of data entered in MUSIC

Site	Catc Area	Road Area	Site area	Imperv area	Roof Area	Non-Roof Area incl. Landscape	Rainwater Tank volume	Rainwater Tank Area	Daily Reuse Demand
	(ha)	(ha)	(ha)	(%age)	(ha)	(ha)	(KL)	(m ²)	(KL)
Lot 102	4.67	0.15	4.52	80	0.90	3.62	590	295	6.3
Lot 103	3.93	0.53	3.4	80	0.68	2.72	444	222	4.7
Lot 101	3.13	0.35	2.78	60	0.55	2.23	363	181	3.9
EA 1	1.84	0	1.84	80	0.37	1.47	240	120	2.6



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Site	Catc Area	Road Area	Site area	Imperv area	Roof Area	Non-Roof Area incl. Landscape	Rainwater Tank volume	Rainwater Tank Area	Daily Reuse Demand
	(ha)	(ha)	(ha)	(%age)	(ha)	(ha)	(KL)	(m ²)	(KL)
EA 2	0.52	0	0.52	80	0.10	0.42	68	34	0.7
Lot 104	1.64	0.31	1.33	80	0.26	1.07	174	87	1.9

8.2 Recycled Water

Development within the Potts Hill Eastern Precinct will ultimately be serviced by a Recycled Water system. The external recycled water supply is not likely to be available in the short term. Nonetheless the recycled water reticulation main within the subdivision will be installed with all other infrastructure. During the period when external recycle water supply is unavailable, rainwater harvesting systems will be used as a substitute for a supply of toilet flushing, garden irrigation and other non potable uses. When the external recycled water supply becomes available, the rainwater tanks will then be converted to supply other larger scale uses such as water for supply of air conditioning cooling towers etc.



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9. STORMWATER DRAINAGE CONCEPT

Details of the site's stormwater drainage concept are illustrated in **Appendix 4** - and summarised below.

A major/minor drainage philosophy has been adopted for the Potts Hill Eastern precinct. Flows up to and including the 20yr ARI will be conveyed in stormwater drainage pipes, whilst flows in excess of the 20yr ARI up to the 100yr ARI will be carried safely within the roadways and overland flow paths of the subdivision.

Lot generated flows will be directed firstly to lot based treatment measures such as rainwater tanks, bio-retention systems and detention systems and then discharge into the minor drainage lines in both Road 1 & 2.

The minor drainage line at the southern end of Road 2 will discharge into the existing stormwater drainage line in Bruncker Road and serve part of the lot 104 and local road catchment.

The minor drainage line at the northern end of Road 2 will run down the boundary between the Lot 102 and Lot 103 and eventually join with the existing 1050mm diameter line under Potts Park. At its top end in Road 1 this line will serve the local road catchment as well as a minor external catchment from within the SWC Reservoir #2 site.

Joining into the above line from the south an inter-allotment drainage lines running along the eastern boundary of Lot 103 (i.e. *along the top of the embankment*). This line will serve part of the Lot 104, the majority of the Lot 103 as well as assist in reducing hydrostatic pressure within the eastern embankment.

The Lot 102 development will drain to the south eastern corner of the site and join the junction of the two above mentioned systems. A small catchment exists upstream of the Lot 102. Under proposed conditions this upstream catchment is to be diverted around the site, potentially into the new line proposed along the eastern boundary of the site.

At the boundary between the Lot 101 & 102 is an emergency overland flow path. This flow path was designed to deliver emergency overflow from Reservoir No. 1 when it was operational. Now that the reservoir has been decommissioned it is generally dry with only the rain that falls directly over it being able to supply runoff volume. The reservoir has sufficient storage capacity to ensure that even in the most extreme event overflow is unlikely. Hence, the overland flow channel is now redundant. Nonetheless, it is proposed to introduce a minor drainage line along this flow path to cater for its local catchment and prevent backup of water behind the raised Road 1. A culvert will be installed beneath Road 1 to deliver flows from the abovementioned system to the receiving system under Potts Park.

At the base of the proposed eastern embankment a surface drainage swale and associated subsoil drainage line is proposed to improve embankment stability.



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A minor drainage line is proposed in Road 1 to serve the Lot 101 and local road catchment. This line will discharge into the existing drainage line in Rookwood Road.



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10. CONCLUSION AND RECOMMENDATION

The preliminary services investigation has revealed that the proposed development can be connected to the existing nearby utilities and generally supply the required services for its day to day business operation without major augmentation works.

To ensure stormwater flows do not increase as a result of the development, stormwater detention systems are proposed for each individual lot and within Road 2. Detailed system wide modelling has demonstrated that the detention will retard post development stormwater discharge flows back to corresponding pre-development level for all storm events and durations. This will ensure that no downstream flooding or drainage capacity related impacts will occur downstream of the site

The implementation of Water Sensitive Urban Design (WSUD) measures both on the individual lots and within the public roads is proposed to meet the water quality retention policy set by Department of Environment and Climate Change. Modelling has demonstrated achievement of the required objectives.

A site servicing & stormwater management strategy has been developed for the Potts Hill EP that meets the needs of the future industrial development whilst minimising the impact on downstream and neighbouring areas.



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11. REFERENCES

1. Sydney Water Corporation – Feasibility Study, 10th August 2007.
2. James Taylor & Associates – Preliminary Stormwater Management Plan Drawing C02 – Rev A (20.06.08).
3. Bankstown City Council – Development Engineering Standard, Adopted June 2007.
4. Department of Environment and climate change (DECC) NSW – Managing urban stormwater – consultation draft – October 2007.
5. Australian and New Zealand Guidelines for Fresh and Marine Water Quality” (2000)
6. Institute of Engineers Australia – Australian Rainfall & Runoff (A.R.R.) 1987
7. Cooperative Research Centre for Catchment Hydrology (CRCCH) – Stormwater Flow and Quality, and the effectiveness of non-proprietary and stormwater treatment measures – a review and gap analysis – December 2004.
8. “Australian Runoff Quality – A Guide to Water sensitive Urban Design” Engineers Australia, 2005.



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Appendix 1 - Existing Services Plan





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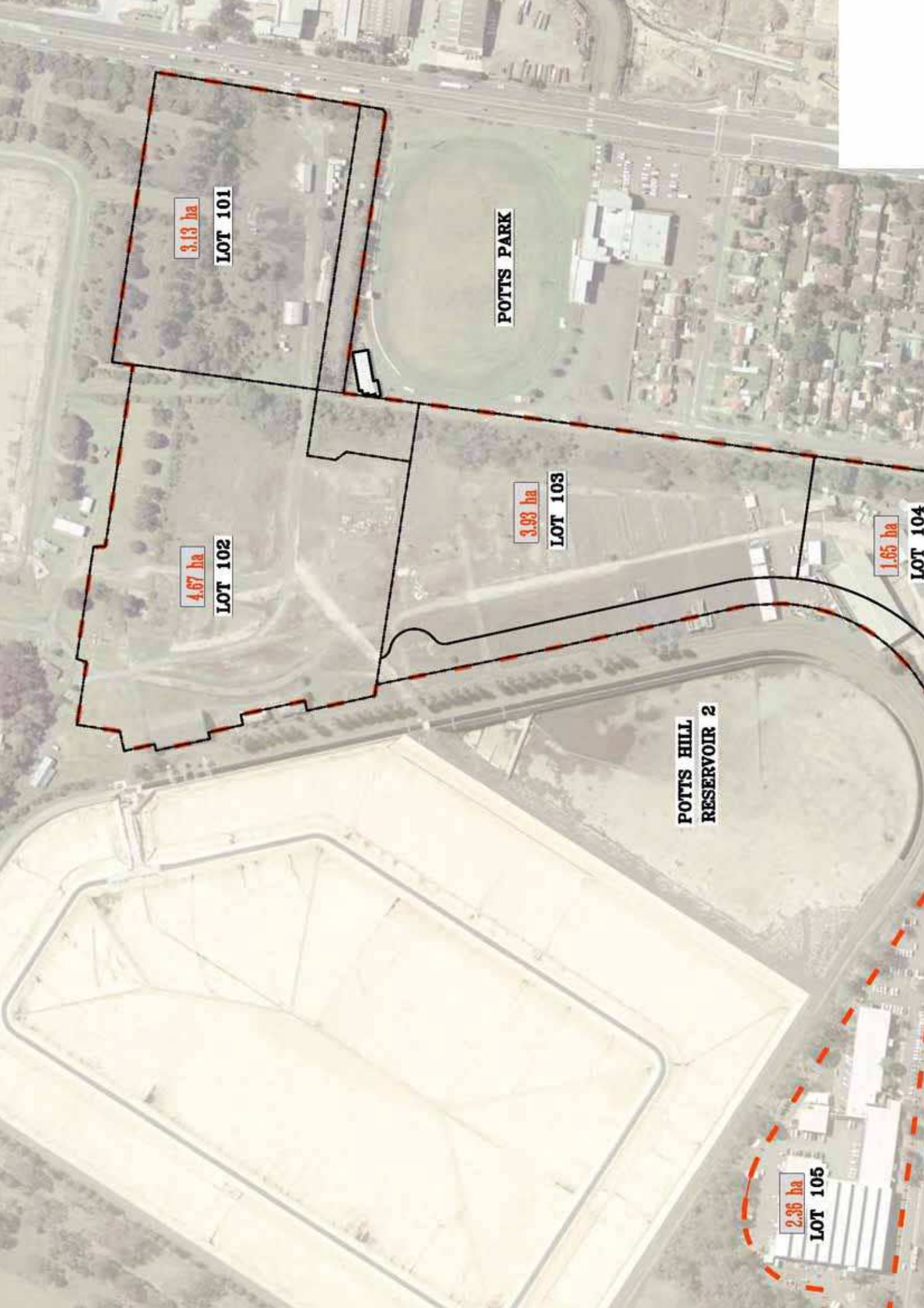
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Appendix 2 - Site Plan



3.13 ha

LOT 101

POTTS PARK

4.67 ha

LOT 102

3.93 ha

LOT 103

1.65 ha

LOT 104

POTTS HILL
RESERVOIR 2

2.36 ha

LOT 105



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Appendix 3 - Rafts Catchment Plan





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Appendix 4 - Stormwater Drainage Concept Plan



LEGEND

- OSD 
- GPT 
- COMBI 
- TREAT 
- BIO-S 
- OIL S 



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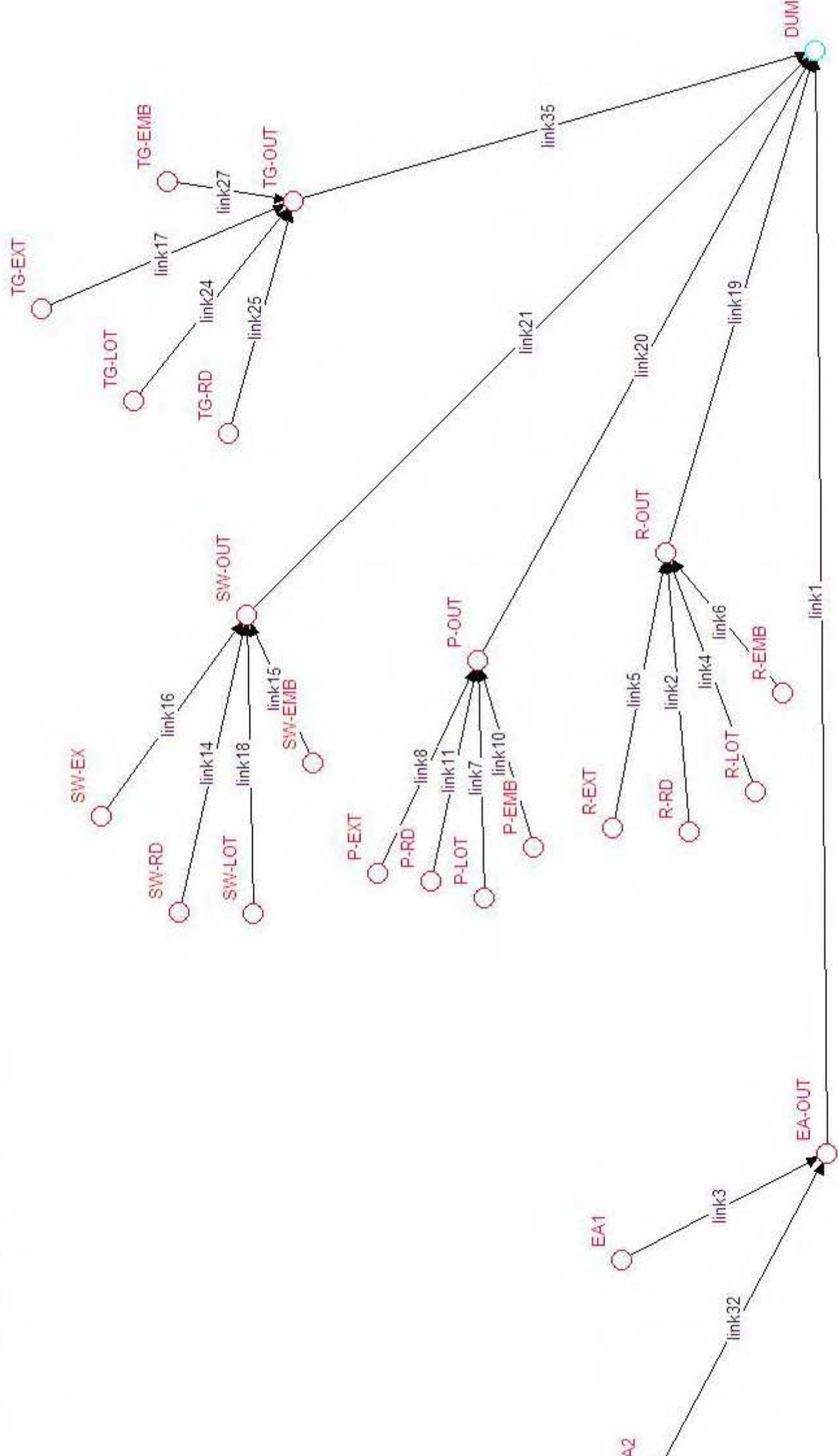
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Appendix 5 - Rafts Result



Run started at: 7th July 2008 16:47:26

```
#####
                        RUNTIME          RESULTS
#####
Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)
```

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

```
#####
```

```
ROUTING INCREMENT (MINS) =      1.00
STORM DURATION (MINS)    =      90.
RETURN PERIOD (YRS)      =     100.
BX                        =     1.0000
TOTAL OF FIRST SUB-AREAS (km2) =      0.00
TOTAL OF SECOND SUB-AREAS (km2) =     19.66
TOTAL OF ALL SUB-AREAS (km2)  =     19.66
```

```
SUMMARY OF CATCHMENT AND RAINFALL DATA
```

Link Label	Catch. Area #1 #2 (ha)	Slope #1 #2 (%)	% Impervious #1 #2 (%)	Pern #1 #2	B #1 #2	Link No.
EA2	.00001 0.5300	2.000 2.000	99.00 1.000	.015 .050	0.000 .0211	1.000
EA1	.00001 1.840	2.000 2.000	99.00 1.000	.015 .050	0.000 .0402	2.000
EA-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.001
TG-RD	.00001 0.3500	2.000 2.000	99.00 1.000	.015 .050	0.000 .0170	3.000
TG-EMB	.00001 0.2900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0069	4.000
TG-LOT	.00001 2.490	5.000 5.000	99.00 1.000	.015 .050	0.000 .0298	5.000
TG-EXT	.00001 0.4400	3.000 3.000	99.00 1.000	.015 .050	0.000 .0156	6.000
TG-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	3.001
R-RD	.00001 0.3100	4.000 4.000	99.00 1.000	.015 .050	0.000 .0113	7.000
R-LOT	.00001 0.9400	2.000 2.000	99.00 1.000	.015 .050	0.000 .0284	8.000
R-EXT	.00001 0.3600	2.000 2.000	99.00 1.000	.015 .050	0.000 .0172	9.000
R-EMB	.00001 0.3900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0080	10.00
R-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	7.001
P-LOT	.00001 2.850	1.000 1.000	99.00 1.000	.015 .050	0.000 .0714	11.00
P-EXT	.00001 0.3900	1.000 1.000	99.00 1.000	.015 .050	0.000 .0254	12.00
P-EMB	.00001 0.5400	1.000 10.00	99.00 1.000	.015 .050	0.000 .0095	13.00
P-RD	.00001 0.5500	1.000 1.000	99.00 1.000	.015 .050	0.000 .0303	14.00
P-OUT	.00001 0.5700	.0010 11.00	99.00 .0100	.015 .050	.0001 .0098	11.00
SW-LOT	.00001 4.370	1.000 1.000	99.00 1.000	.015 .050	0.000 .0891	15.00
SW-RD	.00001 0.1900	1.000 1.000	99.00 1.000	.015 .050	0.000 .0175	16.00
SW-EMB	.00001 0.1000	10.00 10.00	99.00 1.000	.015 .050	0.000 .0040	17.00
SW-EX	.00001 2.160	1.000 1.000	99.00 1.000	.015 .050	0.000 .0618	18.00
SW-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	15.00
DUM-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2 (mm)	Cont. #1 (mm/h)	Loss #2 (mm/h)	Excess Rain #1 (mm)	Rain #2 (mm)	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1346	37.00	0.000
EA1	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3635	45.00	0.000
EA-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.4778	42.00	0.000
TG-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0891	35.00	0.000
TG-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1487	30.00	0.000
TG-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.6822	36.00	0.000
TG-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1363	34.00	0.000
TG-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.9838	33.00	0.000
R-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1225	31.00	0.000
R-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.2115	41.00	0.000
R-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0917	35.00	0.000
R-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1915	31.00	0.000
R-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.5608	31.00	0.000
P-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.4046	60.00	0.000
P-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0735	45.00	0.000
P-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.2535	31.00	0.000
P-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1026	43.00	0.000
P-OUT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.8307	31.00	0.000
SW-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.5853	61.00	0.000
SW-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0402	44.00	0.000
SW-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0519	30.00	0.000
SW-EX	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3250	60.00	0.000
SW-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.9506	60.00	0.000
DUM-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	3.282	32.00	0.000

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Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)
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Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 #2 (ha)	Slope #1 #2 (%)	% Impervious #1 #2 (%)	Pern #1 #2	B #1 #2	Link No.
EA2	.00001 0.5300	2.000 2.000	99.00 1.000	.015 .050	0.000 .0211	1.000
EA1	.00001 1.840	2.000 2.000	99.00 1.000	.015 .050	0.000 .0402	2.000
EA-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.001
TG-RD	.00001 0.3500	2.000 2.000	99.00 1.000	.015 .050	0.000 .0170	3.000
TG-EMB	.00001 0.2900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0069	4.000
TG-LOT	.00001 2.490	5.000 5.000	99.00 1.000	.015 .050	0.000 .0298	5.000
TG-EXT	.00001 0.4400	3.000 3.000	99.00 1.000	.015 .050	0.000 .0156	6.000
TG-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	3.001
R-RD	.00001 0.3100	4.000 4.000	99.00 1.000	.015 .050	0.000 .0113	7.000
R-LOT	.00001 0.9400	2.000 2.000	99.00 1.000	.015 .050	0.000 .0284	8.000
R-EXT	.00001 0.3600	2.000 2.000	99.00 1.000	.015 .050	0.000 .0172	9.000
R-EMB	.00001 0.3900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0080	10.00
R-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	7.001
P-LOT	.00001 2.850	1.000 1.000	99.00 1.000	.015 .050	0.000 .0714	11.00
P-EXT	.00001 0.3900	1.000 1.000	99.00 1.000	.015 .050	0.000 .0254	12.00
P-EMB	.00001 0.5400	1.000 10.00	99.00 1.000	.015 .050	0.000 .0095	13.00
P-RD	.00001 0.5500	1.000 1.000	99.00 1.000	.015 .050	0.000 .0303	14.00
P-OUT	.00001 0.5700	.0010 11.00	99.00 .0100	.015 .050	.0001 .0098	11.00
SW-LOT	.00001 4.370	1.000 1.000	99.00 1.000	.015 .050	0.000 .0891	15.00
SW-RD	.00001 0.1900	1.000 1.000	99.00 1.000	.015 .050	0.000 .0175	16.00
SW-EMB	.00001 0.1000	10.00 10.00	99.00 1.000	.015 .050	0.000 .0040	17.00
SW-EX	.00001 2.160	1.000 1.000	99.00 1.000	.015 .050	0.000 .0618	18.00
SW-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	15.00
DUM-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.002

Link Label	Average Intensity (mm/h)	Init. Loss #1 (mm)	Loss #2 (mm/h)	Cont. Loss #1 (mm/h)	Loss #2 (mm/h)	Excess Rain #1 (mm)	Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak mins	Link Lag mins
EA2	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1442	45.00	0.000
EA1	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.3706	51.00	0.000
EA-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	0.5033	48.00	0.000
TG-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1038	41.00	0.000
TG-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1377	37.00	0.000
TG-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.7434	44.00	0.000
TG-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1475	42.00	0.000
TG-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	1.084	41.00	0.000
R-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1225	40.00	0.000
R-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2179	48.00	0.000
R-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1062	42.00	0.000
R-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1807	38.00	0.000
R-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	0.5798	41.00	0.000
P-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.4262	66.00	0.000
P-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.0751	51.00	0.000
P-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2424	39.00	0.000
P-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1047	48.00	0.000
P-OUT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.8453	41.00	0.000
SW-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.6055	69.00	0.000
SW-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.0412	50.00	0.000
SW-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.0486	37.00	0.000
SW-EX	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.3408	66.00	0.000
SW-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	0.9904	66.00	0.000
DUM-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	3.546	41.00	0.000

Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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7337pre2.out
ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
EA2	.00001	0.5300	2.000	2.000	99.00	1.000	.015	.050	0.000	.0211	1.000
EA1	.00001	1.840	2.000	2.000	99.00	1.000	.015	.050	0.000	.0402	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	.00001	0.3500	2.000	2.000	99.00	1.000	.015	.050	0.000	.0170	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	.00001	2.490	5.000	5.000	99.00	1.000	.015	.050	0.000	.0298	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	.00001	0.3100	4.000	4.000	99.00	1.000	.015	.050	0.000	.0113	7.000
R-LOT	.00001	0.9400	2.000	2.000	99.00	1.000	.015	.050	0.000	.0284	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	.00001	2.850	1.000	1.000	99.00	1.000	.015	.050	0.000	.0714	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	.00001	0.5500	1.000	1.000	99.00	1.000	.015	.050	0.000	.0303	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	.00001	4.370	1.000	1.000	99.00	1.000	.015	.050	0.000	.0891	15.00
SW-RD	.00001	0.1900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0175	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
EA2	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1074	47.00	0.000
EA1	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.2902	65.00	0.000
EA-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.3702	65.00	0.000
TG-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0686	49.00	0.000
TG-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0895	45.00	0.000
TG-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.5457	47.00	0.000
TG-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1117	46.00	0.000
TG-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.8036	46.00	0.000
R-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0880	45.00	0.000
R-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1668	54.00	0.000
R-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0702	49.00	0.000
R-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1201	45.00	0.000
R-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.4179	46.00	0.000
P-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.3851	78.00	0.000
P-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0609	69.00	0.000
P-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1656	45.00	0.000
P-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0844	71.00	0.000
P-OUT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.6931	75.00	0.000
SW-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.5669	83.00	0.000
SW-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0318	57.00	0.000
SW-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0309	45.00	0.000
SW-EX	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.3030	76.00	0.000
SW-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.9054	78.00	0.000
DUM-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	2.764	75.00	0.000

Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 90.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA						
Link	Catch. Area	Slope	% Impervious	Pern	B	Link

7337pre2.out											
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
EA2	.00001	0.5300	2.000	2.000	99.00	1.000	.015	.050	0.000	.0211	1.000
EA1	.00001	1.840	2.000	2.000	99.00	1.000	.015	.050	0.000	.0402	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	.00001	0.3500	2.000	2.000	99.00	1.000	.015	.050	0.000	.0170	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	.00001	2.490	5.000	5.000	99.00	1.000	.015	.050	0.000	.0298	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	.00001	0.3100	4.000	4.000	99.00	1.000	.015	.050	0.000	.0113	7.000
R-LOT	.00001	0.9400	2.000	2.000	99.00	1.000	.015	.050	0.000	.0284	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	.00001	2.850	1.000	1.000	99.00	1.000	.015	.050	0.000	.0714	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	.00001	0.5500	1.000	1.000	99.00	1.000	.015	.050	0.000	.0303	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	.00001	4.370	1.000	1.000	99.00	1.000	.015	.050	0.000	.0891	15.00
SW-RD	.00001	0.1900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0175	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1	Loss #2 (mm/h)	Excess #1	Rain #2 (mm)	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0784	42.00	0.000
EA1	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.2242	53.00	0.000
EA-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.2963	46.00	0.000
TG-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0540	43.00	0.000
TG-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1082	30.00	0.000
TG-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.4213	40.00	0.000
TG-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0783	38.00	0.000
TG-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.5977	40.00	0.000
R-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0651	35.00	0.000
R-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1297	44.00	0.000
R-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0552	43.00	0.000
R-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1353	31.00	0.000
R-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.3195	33.00	0.000
P-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.2423	68.00	0.000
P-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0449	56.00	0.000
P-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1723	31.00	0.000
P-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0611	56.00	0.000
P-OUT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.5260	32.00	0.000
SW-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.3409	72.00	0.000
SW-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0257	46.00	0.000
SW-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0392	31.00	0.000
SW-EX	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1949	62.00	0.000
SW-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.5529	68.00	0.000
DUM-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	1.964	41.00	0.000

Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link Label	Catch. #1	Area #2	Slope #1	% Impervious #2	Pern #1	B #2	Link #1	#2	#1	#2	No.
	(ha)		(%)		(%)						
EA2	.00001	0.5300	2.000	2.000	99.00	1.000	.015	.050	0.000	.0211	1.000
EA1	.00001	1.840	2.000	2.000	99.00	1.000	.015	.050	0.000	.0402	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	.00001	0.3500	2.000	2.000	99.00	1.000	.015	.050	0.000	.0170	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	.00001	2.490	5.000	5.000	99.00	1.000	.015	.050	0.000	.0298	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001

7337pre2.out

R-RD	.00001	0.3100	4.000	4.000	99.00	1.000	.015	.050	0.000	.0113	7.000
R-LOT	.00001	0.9400	2.000	2.000	99.00	1.000	.015	.050	0.000	.0284	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	.00001	2.850	1.000	1.000	99.00	1.000	.015	.050	0.000	.0714	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	.00001	0.5500	1.000	1.000	99.00	1.000	.015	.050	0.000	.0303	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	.00001	4.370	1.000	1.000	99.00	1.000	.015	.050	0.000	.0891	15.00
SW-RD	.00001	0.1900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0175	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0814	47.00	0.000
EA1	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2344	62.00	0.000
EA-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.3025	60.00	0.000
TG-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0570	48.00	0.000
TG-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0994	39.00	0.000
TG-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.4522	46.00	0.000
TG-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0888	45.00	0.000
TG-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.6539	45.00	0.000
R-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0726	43.00	0.000
R-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1378	50.00	0.000
R-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0582	48.00	0.000
R-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1297	40.00	0.000
R-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.3547	41.00	0.000
P-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2653	80.00	0.000
P-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0486	65.00	0.000
P-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1736	40.00	0.000
P-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0663	65.00	0.000
P-OUT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.5575	41.00	0.000
SW-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.3845	81.00	0.000
SW-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0266	57.00	0.000
SW-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0356	39.00	0.000
SW-EX	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2129	69.00	0.000
SW-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.6174	80.00	0.000
DUM-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	2.150	45.00	0.000

Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
EA2	.00001	0.5300	2.000	2.000	99.00	1.000	.015	.050	0.000	.0211	1.000
EA1	.00001	1.840	2.000	2.000	99.00	1.000	.015	.050	0.000	.0402	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	.00001	0.3500	2.000	2.000	99.00	1.000	.015	.050	0.000	.0170	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	.00001	2.490	5.000	5.000	99.00	1.000	.015	.050	0.000	.0298	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	.00001	0.3100	4.000	4.000	99.00	1.000	.015	.050	0.000	.0113	7.000
R-LOT	.00001	0.9400	2.000	2.000	99.00	1.000	.015	.050	0.000	.0284	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	.00001	2.850	1.000	1.000	99.00	1.000	.015	.050	0.000	.0714	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	.00001	0.5500	1.000	1.000	99.00	1.000	.015	.050	0.000	.0303	14.00

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P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	.00001	4.370	1.000	1.000	99.00	1.000	.015	.050	0.000	.0891	15.00
SW-RD	.00001	0.1900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0175	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
EA2	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0616	67.00	0.000
EA1	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.2054	75.00	0.000
EA-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.2661	75.00	0.000
TG-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0423	57.00	0.000
TG-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0689	45.00	0.000
TG-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.3225	54.00	0.000
TG-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0596	52.00	0.000
TG-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.4615	52.00	0.000
R-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0506	48.00	0.000
R-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1073	75.00	0.000
R-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0433	57.00	0.000
R-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0943	45.00	0.000
R-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.2419	46.00	0.000
P-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.2547	90.00	0.000
P-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0435	75.00	0.000
P-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1264	45.00	0.000
P-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0599	76.00	0.000
P-OUT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.4653	76.00	0.000
SW-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.3667	91.00	0.000
SW-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0218	68.00	0.000
SW-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0249	45.00	0.000
SW-EX	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.2004	87.00	0.000
SW-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.5911	90.00	0.000
DUM-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	1.897	76.00	0.000

Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 90.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. #1	Area #2	Slope #1	% Impervious #2	Pern #1	B #2	Link No.
EA2	.00001	0.5300	2.000	2.000	99.00	1.000	1.000
EA1	.00001	1.840	2.000	2.000	99.00	1.000	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	1.001
TG-RD	.00001	0.3500	2.000	2.000	99.00	1.000	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	4.000
TG-LOT	.00001	2.490	5.000	5.000	99.00	1.000	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	3.001
R-RD	.00001	0.3100	4.000	4.000	99.00	1.000	7.000
R-LOT	.00001	0.9400	2.000	2.000	99.00	1.000	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	7.001
P-LOT	.00001	2.850	1.000	1.000	99.00	1.000	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	13.00
P-RD	.00001	0.5500	1.000	1.000	99.00	1.000	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	11.00
SW-LOT	.00001	4.370	1.000	1.000	99.00	1.000	15.00
SW-RD	.00001	0.1900	1.000	1.000	99.00	1.000	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	1.002

Link Average Int. Loss Cont. Loss Excess Rain Peak Time Link

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Label	Intensity (mm/h)	#1 (mm)	#2	#1 (mm/h)	#2	#1 (mm)	#2	Inflow (m^3/s)	to Peak	Lag mins
EA2	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0412	56.00	0.000
EA1	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1275	59.00	0.000
EA-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.1684	57.00	0.000
TG-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0291	53.00	0.000
TG-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0427	35.00	0.000
TG-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.2197	46.00	0.000
TG-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0409	46.00	0.000
TG-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.3150	46.00	0.000
R-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0337	42.00	0.000
R-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0694	56.00	0.000
R-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0298	53.00	0.000
R-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0550	36.00	0.000
R-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.1555	45.00	0.000
P-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1381	75.00	0.000
P-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0258	61.00	0.000
P-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0728	36.00	0.000
P-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0329	64.00	0.000
P-OUT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.2534	61.00	0.000
SW-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1910	78.00	0.000
SW-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0144	55.00	0.000
SW-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0194	32.00	0.000
SW-EX	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1118	70.00	0.000
SW-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.3131	75.00	0.000
DUM-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	1.123	56.00	0.000

Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link Label	Catch. Area (ha)	#1 #2	Slope (%)	% Impervious #1 #2	Pern #1 #2	B #1 #2	Link No.				
EA2	.00001	0.5300	2.000	2.000	99.00	1.000	.015 .050	0.000	.0211	1.000	
EA1	.00001	1.840	2.000	2.000	99.00	1.000	.015 .050	0.000	.0402	2.000	
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015 0.00	.0001	0.000	1.001	
TG-RD	.00001	0.3500	2.000	2.000	99.00	1.000	.015 .050	0.000	.0170	3.000	
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015 .050	0.000	.0069	4.000	
TG-LOT	.00001	2.490	5.000	5.000	99.00	1.000	.015 .050	0.000	.0298	5.000	
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015 .050	0.000	.0156	6.000	
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015 0.00	.0001	0.000	3.001	
R-RD	.00001	0.3100	4.000	4.000	99.00	1.000	.015 .050	0.000	.0113	7.000	
R-LOT	.00001	0.9400	2.000	2.000	99.00	1.000	.015 .050	0.000	.0284	8.000	
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015 .050	0.000	.0172	9.000	
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015 .050	0.000	.0080	10.00	
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015 0.00	.0001	0.000	7.001	
P-LOT	.00001	2.850	1.000	1.000	99.00	1.000	.015 .050	0.000	.0714	11.00	
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015 .050	0.000	.0254	12.00	
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015 .050	0.000	.0095	13.00	
P-RD	.00001	0.5500	1.000	1.000	99.00	1.000	.015 .050	0.000	.0303	14.00	
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015 .050	.0001	.0098	11.00	
SW-LOT	.00001	4.370	1.000	1.000	99.00	1.000	.015 .050	0.000	.0891	15.00	
SW-RD	.00001	0.1900	1.000	1.000	99.00	1.000	.015 .050	0.000	.0175	16.00	
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015 .050	0.000	.0040	17.00	
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015 .050	0.000	.0618	18.00	
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015 0.00	.0001	0.000	15.00	
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015 0.00	.0001	0.000	1.002	

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2 (mm)	Cont. #1	Loss #2 (mm/h)	Excess #1	Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
EA2	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0453	65.00	0.000
EA1	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1375	66.00	0.000
EA-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.1825	65.00	0.000
TG-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0311	61.00	0.000
TG-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0487	43.00	0.000
TG-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.2296	54.00	0.000
TG-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0412	54.00	0.000
TG-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.3255	52.00	0.000

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R-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0355	48.00	0.000
R-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0771	65.00	0.000
R-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0319	61.00	0.000
R-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0623	43.00	0.000
R-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.1667	46.00	0.000
P-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1565	84.00	0.000
P-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0279	67.00	0.000
P-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0859	42.00	0.000
P-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0365	80.00	0.000
P-OUT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.2806	66.00	0.000
SW-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.2119	86.00	0.000
SW-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0154	65.00	0.000
SW-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0213	41.00	0.000
SW-EX	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1265	81.00	0.000
SW-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.3509	83.00	0.000
DUM-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	1.233	65.00	0.000

Potts Hill Eastern Precinct - Pre Dev 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 0.00
TOTAL OF SECOND SUB-AREAS (km2) = 19.66
TOTAL OF ALL SUB-AREAS (km2) = 19.66

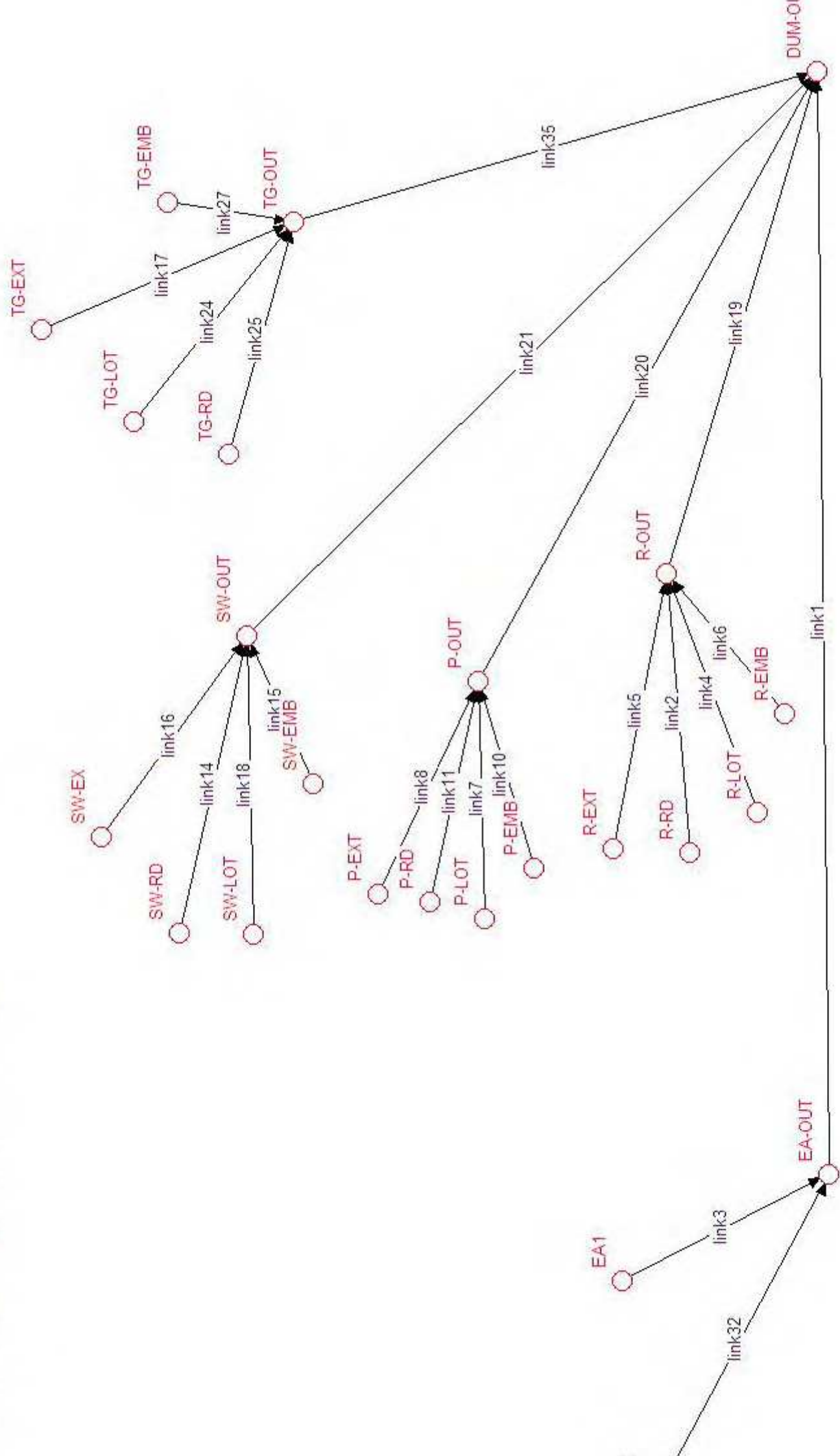
SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	
	(ha)		(%)		(%)						
EA2	.00001	0.5300	2.000	2.000	99.00	1.000	.015	.050	0.000	.0211	1.000
EA1	.00001	1.840	2.000	2.000	99.00	1.000	.015	.050	0.000	.0402	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	.00001	0.3500	2.000	2.000	99.00	1.000	.015	.050	0.000	.0170	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	.00001	2.490	5.000	5.000	99.00	1.000	.015	.050	0.000	.0298	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	.00001	0.3100	4.000	4.000	99.00	1.000	.015	.050	0.000	.0113	7.000
R-LOT	.00001	0.9400	2.000	2.000	99.00	1.000	.015	.050	0.000	.0284	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	.00001	2.850	1.000	1.000	99.00	1.000	.015	.050	0.000	.0714	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	.00001	0.5500	1.000	1.000	99.00	1.000	.015	.050	0.000	.0303	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	.00001	4.370	1.000	1.000	99.00	1.000	.015	.050	0.000	.0891	15.00
SW-RD	.00001	0.1900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0175	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
		(mm)		(mm/h)		(mm)				
EA2	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0413	76.00	0.000
EA1	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.1352	78.00	0.000
EA-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.1762	76.00	0.000
TG-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0279	75.00	0.000
TG-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0326	49.00	0.000
TG-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.2009	75.00	0.000
TG-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0359	75.00	0.000
TG-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.2899	75.00	0.000
R-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0256	56.00	0.000
R-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0719	76.00	0.000
R-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0286	75.00	0.000
R-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0416	49.00	0.000
R-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.1591	75.00	0.000
P-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.1577	99.00	0.000
P-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0266	85.00	0.000
P-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0539	50.00	0.000
P-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0358	90.00	0.000
P-OUT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.2821	90.00	0.000

							7337pre2.out				
SW-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.2267	115.0	0.000	
SW-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0148	76.00	0.000	
SW-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0152	46.00	0.000	
SW-EX	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.1267	91.00	0.000	
SW-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.3574	98.00	0.000	
DUM-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	1.207	76.00	0.000	

Run completed at: 7th July 2008 16:47:34



Run started at: 7th July 2008 13:39:50

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#####
RUNTIME                RESULTS
#####
Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)
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Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) =      1.00
STORM DURATION (MINS)    =      90.
RETURN PERIOD (YRS)      =     100.
BX                        =     1.0000
TOTAL OF FIRST SUB-AREAS (km2) =     10.38
TOTAL OF SECOND SUB-AREAS (km2) =      9.28
TOTAL OF ALL SUB-AREAS (km2)  =     19.66
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SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	
	(ha)		(%)		(%)						
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3043	27.00	0.000
EA1	62.692	5.000	25.00	0.000	2.500	89.037	65.996	1.041	30.00	0.000
EA-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	1.344	30.00	0.000
TG-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.2039	30.00	0.000
TG-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1487	30.00	0.000
TG-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	1.096	30.00	0.000
TG-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1363	34.00	0.000
TG-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	1.567	30.00	0.000
R-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1845	27.00	0.000
R-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.5276	30.00	0.000
R-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0917	35.00	0.000
R-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1915	31.00	0.000
R-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.9700	30.00	0.000
P-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	1.440	30.00	0.000
P-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0735	45.00	0.000
P-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.2535	31.00	0.000
P-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3007	30.00	0.000
P-OUT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	2.290	30.00	0.000
SW-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	2.174	28.00	0.000
SW-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1105	27.00	0.000
SW-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0519	30.00	0.000
SW-EX	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3250	60.00	0.000
SW-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	2.482	30.00	0.000
DUM-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	8.653	30.00	0.000

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Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
 STORM DURATION (MINS) = 120.
 RETURN PERIOD (YRS) = 100.
 BX = 1.0000
 TOTAL OF FIRST SUB-AREAS (km2) = 10.38
 TOTAL OF SECOND SUB-AREAS (km2) = 9.28
 TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 #2 (ha)	Slope #1 #2 (%)	% Impervious #1 #2 (%)	Pern #1 #2	B #1 #2	Link No.
EA2	0.4240 0.1060	2.000 2.000	99.00 1.000	.015 .030	.0007 .0062	1.000
EA1	1.472 0.3680	2.000 2.000	99.00 1.000	.015 .030	.0013 .0118	2.000
EA-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.001
TG-RD	0.2800 0.0700	2.000 2.000	99.00 1.000	.015 .030	.0006 .0050	3.000
TG-EMB	.00001 0.2900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0069	4.000
TG-LOT	1.245 1.245	5.000 5.000	99.00 1.000	.015 .050	.0008 .0208	5.000
TG-EXT	.00001 0.4400	3.000 3.000	99.00 1.000	.015 .050	0.000 .0156	6.000
TG-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	3.001
R-RD	0.2480 0.0620	4.000 4.000	99.00 1.000	.015 .030	.0004 .0033	7.000
R-LOT	0.7050 0.2350	2.000 2.000	99.00 1.000	.015 .030	.0009 .0094	8.000
R-EXT	.00001 0.3600	2.000 2.000	99.00 1.000	.015 .050	0.000 .0172	9.000
R-EMB	.00001 0.3900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0080	10.00
R-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	7.001
P-LOT	2.138 0.7120	1.000 1.000	99.00 1.000	.015 .030	.0022 .0236	11.00
P-EXT	.00001 0.3900	1.000 1.000	99.00 1.000	.015 .050	0.000 .0254	12.00
P-EMB	.00001 0.5400	1.000 10.00	99.00 1.000	.015 .050	0.000 .0095	13.00
P-RD	0.4400 0.1100	1.000 1.000	99.00 1.000	.015 .030	.0010 .0089	14.00
P-OUT	.00001 0.5700	.0010 11.00	99.00 .0100	.015 .050	.0001 .0098	11.00
SW-LOT	3.278 1.092	1.000 1.000	99.00 1.000	.015 .030	.0028 .0295	15.00
SW-RD	0.1520 0.0380	1.000 1.000	99.00 1.000	.015 .030	.0006 .0051	16.00
SW-EMB	.00001 0.1000	10.00 10.00	99.00 1.000	.015 .050	0.000 .0040	17.00
SW-EX	.00001 2.160	1.000 1.000	99.00 1.000	.015 .050	0.000 .0618	18.00
SW-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	15.00
DUM-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2 (mm)	Cont. #1 (mm/h)	Loss #2 (mm/h)	Excess #1 (mm)	Rain #2 (mm)	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
EA2	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2822	32.00	0.000
EA1	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.9564	35.00	0.000
EA-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	1.236	35.00	0.000
TG-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1921	35.00	0.000
TG-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1377	37.00	0.000
TG-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.9495	35.00	0.000
TG-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1475	42.00	0.000
TG-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	1.330	35.00	0.000
R-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1747	32.00	0.000
R-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.4714	32.00	0.000
R-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1062	42.00	0.000
R-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1807	38.00	0.000
R-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	0.8360	35.00	0.000
P-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	1.343	33.00	0.000
P-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.0751	51.00	0.000
P-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2424	39.00	0.000
P-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2772	35.00	0.000
P-OUT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	2.007	35.00	0.000
SW-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	2.050	33.00	0.000
SW-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1046	32.00	0.000
SW-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.0486	37.00	0.000
SW-EX	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.3408	66.00	0.000
SW-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	2.276	35.00	0.000
DUM-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	7.685	35.00	0.000

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Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
 STORM DURATION (MINS) = 180.
 RETURN PERIOD (YRS) = 100.

BX = 1.0000
 TOTAL OF FIRST SUB-AREAS (km2) = 10.38
 TOTAL OF SECOND SUB-AREAS (km2) = 9.28
 TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	
	(ha)		(%)		(%)						
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1	Loss #2 (mm/h)	Excess #1	Rain #2 (mm)	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1655	45.00	0.000
EA1	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.5710	45.00	0.000
EA-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.7365	45.00	0.000
TG-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1100	44.00	0.000
TG-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0895	45.00	0.000
TG-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.6864	45.00	0.000
TG-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1117	46.00	0.000
TG-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.9955	45.00	0.000
R-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0977	42.00	0.000
R-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.2897	45.00	0.000
R-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0702	49.00	0.000
R-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1201	45.00	0.000
R-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.5709	45.00	0.000
P-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.8034	45.00	0.000
P-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0609	69.00	0.000
P-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1656	45.00	0.000
P-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1666	45.00	0.000
P-OUT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	1.351	45.00	0.000
SW-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	1.204	45.00	0.000
SW-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0594	45.00	0.000
SW-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0309	45.00	0.000
SW-EX	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.3030	76.00	0.000
SW-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	1.451	45.00	0.000
DUM-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	5.105	45.00	0.000

 Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
 to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
 STORM DURATION (MINS) = 90.
 RETURN PERIOD (YRS) = 20.
 BX = 1.0000
 TOTAL OF FIRST SUB-AREAS (km2) = 10.38
 TOTAL OF SECOND SUB-AREAS (km2) = 9.28
 TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	

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	(ha)		(%)		(%)						
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.2387	30.00	0.000
EA1	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.8050	30.00	0.000
EA-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	1.044	30.00	0.000
TG-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1631	30.00	0.000
TG-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1082	30.00	0.000
TG-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.8040	30.00	0.000
TG-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0783	38.00	0.000
TG-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	1.126	30.00	0.000
R-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1498	30.00	0.000
R-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.3991	30.00	0.000
R-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0552	43.00	0.000
R-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1353	31.00	0.000
R-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.7082	30.00	0.000
P-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	1.130	28.00	0.000
P-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0449	56.00	0.000
P-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1723	31.00	0.000
P-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.2370	30.00	0.000
P-OUT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	1.692	30.00	0.000
SW-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	1.733	28.00	0.000
SW-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0844	30.00	0.000
SW-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0392	31.00	0.000
SW-EX	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1949	62.00	0.000
SW-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	1.909	30.00	0.000
DUM-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	6.479	30.00	0.000

Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. #1	Area #2	Slope #1	% Impervious #2	Pern #1	B #2	Link No.
	(ha)		(%)	(%)			
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	3.001

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R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2234	35.00	0.000
EA1	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.7578	32.00	0.000
EA-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.9757	32.00	0.000
TG-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1528	32.00	0.000
TG-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0994	39.00	0.000
TG-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.6928	35.00	0.000
TG-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0888	45.00	0.000
TG-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.9178	35.00	0.000
R-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1384	32.00	0.000
R-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.3668	32.00	0.000
R-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0582	48.00	0.000
R-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1297	40.00	0.000
R-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.5777	35.00	0.000
P-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	1.097	33.00	0.000
P-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0486	65.00	0.000
P-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1736	40.00	0.000
P-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2248	33.00	0.000
P-OUT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	1.450	35.00	0.000
SW-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	1.642	33.00	0.000
SW-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0802	32.00	0.000
SW-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0356	39.00	0.000
SW-EX	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2129	69.00	0.000
SW-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	1.744	33.00	0.000
DUM-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	5.643	35.00	0.000

Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00

SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1321	45.00	0.000
EA1	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.4355	45.00	0.000
EA-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.5676	45.00	0.000
TG-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0885	45.00	0.000
TG-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0689	45.00	0.000
TG-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.4861	45.00	0.000
TG-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0596	52.00	0.000
TG-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.6930	45.00	0.000
R-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0795	45.00	0.000
R-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.2221	45.00	0.000
R-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0433	57.00	0.000
R-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0943	45.00	0.000
R-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.4288	45.00	0.000
P-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.6063	45.00	0.000
P-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0435	75.00	0.000
P-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1264	45.00	0.000
P-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1307	45.00	0.000
P-OUT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	1.018	45.00	0.000
SW-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.9281	45.00	0.000
SW-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0466	45.00	0.000
SW-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0249	45.00	0.000
SW-EX	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.2004	87.00	0.000
SW-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	1.072	45.00	0.000
DUM-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	3.779	45.00	0.000

Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 90.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. #1	Area #2	Slope #1	% Impervious #2	Pern #1	B #2	Link No.
	(ha)		(%)	(%)			
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	3.001
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	1.002

Link Label	Average Intensity	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow	Time to	Link Lag
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7337dev2.out											
	(mm/h)		(mm)		(mm/h)		(mm)		(m ³ /s)	Peak	mins
EA2	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1738	30.00	0.000	
EA1	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.5890	27.00	0.000	
EA-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.7621	30.00	0.000	
TG-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1178	27.00	0.000	
TG-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0427	35.00	0.000	
TG-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.5235	30.00	0.000	
TG-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0409	46.00	0.000	
TG-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.6847	30.00	0.000	
R-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1058	27.00	0.000	
R-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.2858	30.00	0.000	
R-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0298	53.00	0.000	
R-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0550	36.00	0.000	
R-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.4377	30.00	0.000	
P-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.8532	28.00	0.000	
P-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0258	61.00	0.000	
P-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0728	36.00	0.000	
P-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1757	28.00	0.000	
P-OUT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	1.103	30.00	0.000	
SW-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	1.288	28.00	0.000	
SW-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0609	30.00	0.000	
SW-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0194	32.00	0.000	
SW-EX	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1118	70.00	0.000	
SW-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	1.371	30.00	0.000	
DUM-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	4.358	30.00	0.000	

Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link	Average	Init.	Loss	Cont.	Loss	Excess	Rain	Peak	Time	Link
Label	Intensity	#1	#2	#1	#2	#1	#2	Inflow	to	Lag
	(mm/h)	(mm)		(mm/h)		(mm)		(m ³ /s)	Peak	mins
EA2	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1673	32.00	0.000
EA1	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.5720	32.00	0.000
EA-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.7392	32.00	0.000
TG-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1186	32.00	0.000
TG-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0487	43.00	0.000
TG-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.5108	32.00	0.000
TG-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0412	54.00	0.000
TG-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.6294	32.00	0.000
R-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1058	32.00	0.000

R-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.2699	32.00	0.000
R-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0319	61.00	0.000
R-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0623	43.00	0.000
R-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.3757	32.00	0.000
P-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.8163	33.00	0.000
P-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0279	67.00	0.000
P-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0859	42.00	0.000
P-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1702	33.00	0.000
P-OUT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.9865	33.00	0.000
SW-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	1.238	33.00	0.000
SW-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0583	32.00	0.000
SW-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0213	41.00	0.000
SW-EX	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1265	81.00	0.000
SW-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	1.294	33.00	0.000
DUM-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	3.890	35.00	0.000

Potts Hill Eastern Precinct - Developed, No Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

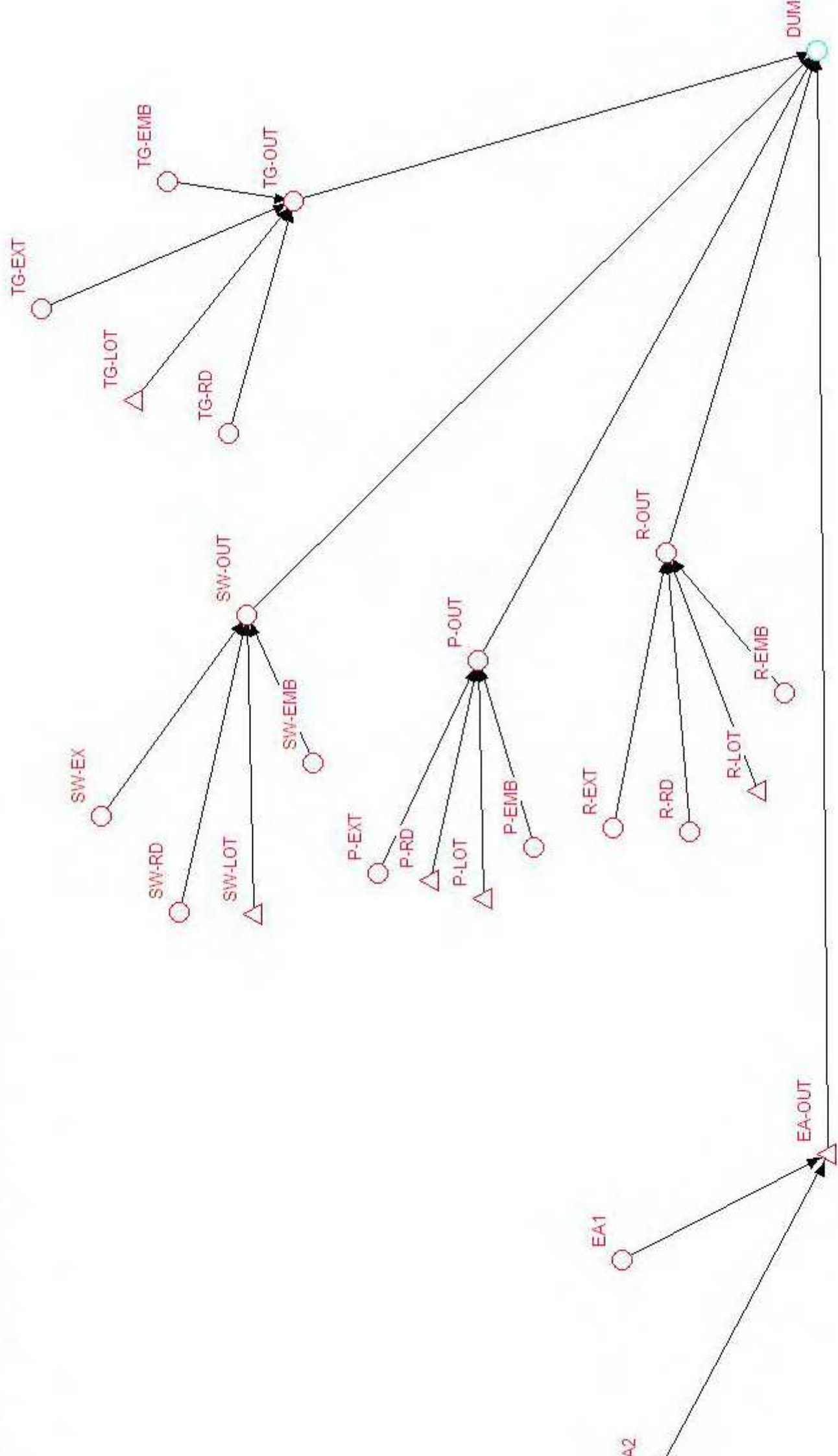
Link Label	Catch. Area #1	Catch. Area #2	Slope #1	Slope #2	% Impervious #1	% Impervious #2	Pern #1	Pern #2	B #1	B #2	Link No.
	(ha)		(%)		(%)						
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	1.000
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	2.000
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	3.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	4.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	5.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	6.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	3.001
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	7.000
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	8.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	9.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	10.00
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	7.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
EA2	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0928	45.00	0.000
EA1	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.3103	45.00	0.000
EA-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.4031	45.00	0.000
TG-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0613	45.00	0.000
TG-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0326	49.00	0.000
TG-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.2910	45.00	0.000
TG-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0359	75.00	0.000
TG-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.3986	45.00	0.000
R-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0589	45.00	0.000
R-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.1542	45.00	0.000
R-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0286	75.00	0.000
R-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0416	49.00	0.000
R-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.2599	45.00	0.000
P-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.4416	45.00	0.000
P-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0266	85.00	0.000
P-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0539	50.00	0.000
P-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0916	45.00	0.000
P-OUT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.6261	45.00	0.000
SW-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.6727	45.00	0.000

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SW-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0325	45.00	0.000
SW-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0152	46.00	0.000
SW-EX	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.1267	91.00	0.000
SW-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.7428	45.00	0.000
DUM-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	2.430	45.00	0.000

Run completed at: 7th July 2008 13:39:57



Run started at: 8th July 2008 17:19:57

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#####
                RUNTIME                RESULTS
#####
Potts Hill Eastern Precinct - Developed, with Det 2 Simplified (MS version)
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Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) =      1.00
STORM DURATION (MINS)     =      90.
RETURN PERIOD (YRS)      =     100.
BX                         =     1.0000
TOTAL OF FIRST SUB-AREAS (km2) =     10.38
TOTAL OF SECOND SUB-AREAS (km2) =      9.28
TOTAL OF ALL SUB-AREAS (km2) =     19.66
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SUMMARY OF CATCHMENT AND RAINFALL DATA											
Link	Catch. Area		Slope		% Impervious		Pern		B		Link
Label	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	No.
	(ha)		(%)		(%)						
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link	Average	Init.	Loss	Cont.	Loss	Excess	Rain	Peak	Time	Link
Label	Intensity	#1	#2	#1	#2	#1	#2	Inflow	to	Lag
	(mm/h)	(mm)		(mm/h)		(mm)		(m^3/s)	Peak	mins
R-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.5276	30.00	0.000
R-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1845	27.00	0.000
R-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0917	35.00	0.000
R-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1915	31.00	0.000
R-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.4584	30.00	0.000
TG-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.2039	30.00	0.000
TG-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1487	30.00	0.000
TG-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	1.096	30.00	0.000
TG-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1363	34.00	0.000
TG-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.8176	38.00	0.000
EA1	62.692	5.000	25.00	0.000	2.500	89.037	65.996	1.041	30.00	0.000
EA2	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3043	27.00	0.000
EA-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	1.344	30.00	0.000
P-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	1.440	30.00	0.000
P-EXT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0735	45.00	0.000
P-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.2535	31.00	0.000
P-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3007	30.00	0.000
P-OUT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.7209	31.00	0.000
SW-LOT	62.692	5.000	25.00	0.000	2.500	89.037	65.996	2.174	28.00	0.000
SW-RD	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.1105	27.00	0.000
SW-EMB	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.0519	30.00	0.000
SW-EX	62.692	5.000	25.00	0.000	2.500	89.037	65.996	0.3250	60.00	0.000
SW-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	0.9090	56.00	0.000
DUM-OUT	62.692	5.000	0.000	0.000	0.000	89.037	0.000	3.087	38.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage

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	Peak	(m ³ /s)	Peak	(m ³ /s)	(m ³)	Avail	Used	Used
R-LOT	30.00	.5276	40.00	.1766	782.61	0.0000	434.03	0.4340
TG-LOT	30.00	1.096	38.00	.5694	1933.1	0.0000	606.78	0.4045
EA-OUT	30.00	1.343	30.00	.4800	2001.5	0.0000	748.20	0.6235
P-LOT	30.00	1.440	42.00	.3000	2376.5	0.0000	1419.1	0.7095
P-RD	30.00	.3007	29.00	.1000	464.36	0.0000	185.79	0.6193
SW-LOT	28.00	2.174	32.00	.5500	3641.5	0.0000	1688.1	0.5627

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, With Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. #1	Area #2	Slope #1	% Impervious #2	Pern #1	B #2	Link No.
	(ha)		(%)	(%)			
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess Rain #1	Peak Inflow #2	Time to Peak	Link Lag
		(mm)		(mm/h)		(mm)	(m ³ /s)	mins	mins
R-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.4714	32.00
R-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1747	32.00
R-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1062	42.00
R-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1807	38.00
R-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	0.4418	45.00
TG-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1921	35.00
TG-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1377	37.00
TG-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.9495	35.00
TG-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1475	42.00
TG-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	0.7783	47.00
EA1	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.9564	35.00
EA2	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2822	32.00
EA-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	1.236	35.00
P-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	1.343	33.00
P-EXT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.0751	51.00

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P-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2424	39.00	0.000
P-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.2772	35.00	0.000
P-OUT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.7742	42.00	0.000
SW-LOT	52.360	5.000	25.00	0.000	2.500	99.721	75.721	2.050	33.00	0.000
SW-RD	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.1046	32.00	0.000
SW-EMB	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.0486	37.00	0.000
SW-EX	52.360	5.000	25.00	0.000	2.500	99.721	75.721	0.3408	66.00	0.000
SW-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	0.9324	65.00	0.000
DUM-OUT	52.360	5.000	0.000	0.000	0.000	99.721	0.000	3.105	42.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m ³ /s)	Time to Peak	Peak Outflow (m ³ /s)	Total Inflow (m ³)	Vol. Avail	Basin Vol. Used	Stage Used
R-LOT	32.00	.4714	45.00	.1878	880.33	0.0000	434.49	0.4345
TG-LOT	35.00	.9495	47.00	.5450	2185.4	0.0000	606.21	0.4041
EA-OUT	35.00	1.236	39.00	.4800	2249.1	0.0000	746.60	0.6222
P-LOT	33.00	1.342	49.00	.3000	2671.9	0.0000	1441.4	0.7207
P-RD	35.00	.2772	37.00	.1000	521.96	0.0000	184.81	0.6160
SW-LOT	33.00	2.050	41.00	.5500	4099.0	0.0000	1719.2	0.5731

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, with Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1 (%)	% Impervious #2 (%)	Pern #1	Pern #2	B #1	B #2	Link No.
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2 (mm)	Cont. #1 (mm/h)	Loss #2 (mm/h)	Excess #1 (mm)	Rain #2 (mm)	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
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R-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.2897	45.00	0.000
R-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0977	42.00	0.000
R-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0702	49.00	0.000
R-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1201	45.00	0.000
R-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.3067	75.00	0.000
TG-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1100	44.00	0.000
TG-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0895	45.00	0.000
TG-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.6864	45.00	0.000
TG-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1117	46.00	0.000
TG-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.5891	45.00	0.000
EA1	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.5710	45.00	0.000
EA2	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1655	45.00	0.000
EA-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.7365	45.00	0.000
P-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.8034	45.00	0.000
P-EXT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0609	69.00	0.000
P-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1656	45.00	0.000
P-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.1666	45.00	0.000
P-OUT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.6169	75.00	0.000
SW-LOT	40.507	5.000	25.00	0.000	2.500	116.52	90.186	1.204	45.00	0.000
SW-RD	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0594	45.00	0.000
SW-EMB	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.0309	45.00	0.000
SW-EX	40.507	5.000	25.00	0.000	2.500	116.52	90.186	0.3030	76.00	0.000
SW-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	0.8966	75.00	0.000
DUM-OUT	40.507	5.000	0.000	0.000	0.000	116.52	0.000	2.658	76.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m ³ /s)	Time to Peak	Peak Outflow (m ³ /s)	Total Inflow (m ³)	Vol. Avail	Basin Vol. Used	Stage Used
R-LOT	45.00	.2897	75.00	.1463	1033.5	0.0000	432.76	0.4328
TG-LOT	45.00	.6864	76.00	.3672	2575.9	0.0000	602.04	0.4014
EA-OUT	45.00	.7365	75.00	.3709	2636.3	0.0000	662.88	0.5524
P-LOT	45.00	.8034	66.00	.3000	3132.9	0.0000	1419.0	0.7095
P-RD	45.00	.1666	45.00	.1000	611.97	0.0000	157.46	0.5249
SW-LOT	45.00	1.204	54.00	.5500	4807.3	0.0000	1557.6	0.5192

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, with Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 90.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1 (%)	% Impervious #2 (%)	Pern #1	Pern #2	B #1	B #2	Link No.
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00

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P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
R-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.3991	30.00	0.000
R-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1498	30.00	0.000
R-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0552	43.00	0.000
R-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1353	31.00	0.000
R-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.3250	30.00	0.000
TG-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1631	30.00	0.000
TG-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1082	30.00	0.000
TG-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.8040	30.00	0.000
TG-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0783	38.00	0.000
TG-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.6022	30.00	0.000
EA1	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.8050	30.00	0.000
EA2	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.2387	30.00	0.000
EA-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	1.044	30.00	0.000
P-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	1.130	28.00	0.000
P-EXT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0449	56.00	0.000
P-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1723	31.00	0.000
P-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.2370	30.00	0.000
P-OUT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.4943	32.00	0.000
SW-LOT	47.660	5.000	25.00	0.000	2.500	66.490	43.615	1.733	28.00	0.000
SW-RD	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0844	30.00	0.000
SW-EMB	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.0392	31.00	0.000
SW-EX	47.660	5.000	25.00	0.000	2.500	66.490	43.615	0.1949	62.00	0.000
SW-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	0.5376	60.00	0.000
DUM-OUT	47.660	5.000	0.000	0.000	0.000	66.490	0.000	2.029	30.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m ³ /s)	Time to Peak	Peak Outflow (m ³ /s)	Total Inflow (m ³)	Vol. Avail	Basin Vol. Used	Stage Used
R-LOT	30.00	.3991	57.00	.0800	571.61	0.0000	415.21	0.4152
TG-LOT	30.00	.8040	30.00	.2800	1371.7	0.0000	404.50	0.2697
EA-OUT	30.00	1.043	29.00	.2700	1467.4	0.0000	587.69	0.4897
P-LOT	28.00	1.129	54.00	.1800	1732.4	0.0000	1191.9	0.5959
P-RD	30.00	.2370	30.00	.0650	340.68	0.0000	146.17	0.4872
SW-LOT	28.00	1.733	32.00	.3200	2659.4	0.0000	1372.6	0.4575

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, with Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link	Catch. Area	Slope	% Impervious	Pern	B	Link
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7337detention2.out											
Label	#1 (ha)	#2	#1 (%)	#2	#1 (%)	#2	#1	#2	#1	#2	No.
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m^3/s)	Time to Peak	Link Lag mins
R-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.3668	32.00	0.000
R-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1384	32.00	0.000
R-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0582	48.00	0.000
R-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1297	40.00	0.000
R-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.2892	40.00	0.000
TG-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1528	32.00	0.000
TG-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0994	39.00	0.000
TG-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.6928	35.00	0.000
TG-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0888	45.00	0.000
TG-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.5597	40.00	0.000
EA1	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.7578	32.00	0.000
EA2	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2234	35.00	0.000
EA-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.9757	32.00	0.000
P-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	1.097	33.00	0.000
P-EXT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0486	65.00	0.000
P-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.1736	40.00	0.000
P-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2248	33.00	0.000
P-OUT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.5035	40.00	0.000
SW-LOT	39.837	5.000	25.00	0.000	2.500	74.674	50.924	1.642	33.00	0.000
SW-RD	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0802	32.00	0.000
SW-EMB	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.0356	39.00	0.000
SW-EX	39.837	5.000	25.00	0.000	2.500	74.674	50.924	0.2129	69.00	0.000
SW-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	0.5618	65.00	0.000
DUM-OUT	39.837	5.000	0.000	0.000	0.000	74.674	0.000	2.010	41.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m^3/s)	Time to Peak	Peak Outflow (m^3/s)	Total Inflow (m^3)	----- Vol. Avail	Basin Vol. Used	----- Stage Used
R-LOT	32.00	.3668	63.00	.0800	645.90	0.0000	420.16	0.4202
TG-LOT	35.00	.6928	40.00	.2800	1564.3	0.0000	390.38	0.2603
EA-OUT	32.00	.9757	38.00	.2700	1657.2	0.0000	556.48	0.4637
P-LOT	33.00	1.097	60.00	.1800	1959.3	0.0000	1235.1	0.6176
P-RD	33.00	.2248	39.00	.0650	384.37	0.0000	143.01	0.4767
SW-LOT	33.00	1.642	42.00	.3200	3007.1	0.0000	1393.7	0.4646

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, with Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 20.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	
	(ha)		(%)		(%)						
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2 (mm)	Cont. #1 (mm/h)	Loss #2 (mm/h)	Excess #1 (mm)	Rain #2 (mm)	Peak Inflow (m ³ /s)	Time to Peak mins	Link Lag mins
R-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.2221	45.00	0.000
R-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0795	45.00	0.000
R-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0433	57.00	0.000
R-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0943	45.00	0.000
R-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.2227	45.00	0.000
TG-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0885	45.00	0.000
TG-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0689	45.00	0.000
TG-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.4861	45.00	0.000
TG-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0596	52.00	0.000
TG-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.4280	49.00	0.000
EA1	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.4355	45.00	0.000
EA2	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1321	45.00	0.000
EA-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.5676	45.00	0.000
P-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.6063	45.00	0.000
P-EXT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0435	75.00	0.000
P-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1264	45.00	0.000
P-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.1307	45.00	0.000
P-OUT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.4155	75.00	0.000
SW-LOT	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.9281	45.00	0.000
SW-RD	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0466	45.00	0.000
SW-EMB	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.0249	45.00	0.000
SW-EX	30.853	5.000	25.00	0.000	2.500	87.559	61.392	0.2004	87.00	0.000
SW-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	0.5463	75.00	0.000
DUM-OUT	30.853	5.000	0.000	0.000	0.000	87.559	0.000	1.841	75.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow	Time to Peak	Peak Outflow	Total Inflow	Vol. Avail	Basin Vol. Used	Stage Used
	(m ³ /s)		(m ³ /s)		(m ³)			
R-LOT	45.00	.2221	75.00	.0800	761.73	0.0000	417.27	0.4173
TG-LOT	45.00	.4861	49.00	.2800	1854.4	0.0000	286.21	0.1908
EA-OUT	45.00	.5676	44.00	.2700	1950.6	0.0000	454.46	0.3787
P-LOT	45.00	.6063	74.00	.1800	2309.0	0.0000	1235.9	0.6180
P-RD	45.00	.1307	46.00	.0650	452.84	0.0000	123.30	0.4110
SW-LOT	45.00	.9281	55.00	.3200	3540.9	0.0000	1357.5	0.4525

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, With Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 90.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area		Slope		% Impervious		Pern		B		Link No.
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	
	(ha)		(%)		(%)						
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00
SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1	Loss #2	Cont. #1	Loss #2	Excess #1	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag
		(mm)		(mm/h)		(mm)			mins	
R-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.2858	30.00	0.000
R-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1058	27.00	0.000
R-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0298	53.00	0.000
R-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0550	36.00	0.000
R-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.1679	30.00	0.000
TG-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1178	27.00	0.000
TG-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0427	35.00	0.000
TG-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.5235	30.00	0.000
TG-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0409	46.00	0.000
TG-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.3212	30.00	0.000
EA1	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.5890	27.00	0.000
EA2	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1738	30.00	0.000
EA-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.7621	30.00	0.000
P-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.8532	28.00	0.000
P-EXT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0258	61.00	0.000
P-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0728	36.00	0.000
P-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1757	28.00	0.000
P-OUT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.2485	36.00	0.000
SW-LOT	36.426	5.000	25.00	0.000	2.500	49.639	26.931	1.288	28.00	0.000
SW-RD	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0609	30.00	0.000
SW-EMB	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.0194	32.00	0.000
SW-EX	36.426	5.000	25.00	0.000	2.500	49.639	26.931	0.1118	70.00	0.000
SW-OUT	36.426	5.000	0.000	0.000	0.000	49.639	0.000	0.3054	60.00	0.000

DUM-OUT 36.426 5.000 0.000 0.000 0.000 49.639 0.000 1.122 30.00 0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m ³ /s)	Time to Peak	Peak Outflow (m ³ /s)	Total Inflow (m ³)	Vol. Avail	Basin Vol. Used	Stage Used
R-LOT	30.00	.2858	12.00	.0160	412.96	0.0000	329.54	0.3295
TG-LOT	30.00	.5235	12.00	.1600	954.37	0.0000	253.41	0.1689
EA-OUT	30.00	.7621	12.00	.1700	1068.9	0.0000	403.82	0.3365
P-LOT	28.00	.8532	12.00	.0550	1253.6	0.0000	945.93	0.4730
P-RD	28.00	.1757	12.00	.0300	248.01	0.0000	119.06	0.3969
SW-LOT	28.00	1.287	12.00	.1800	1920.2	0.0000	1019.4	0.3398

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, with Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area (ha)	Slope #1 #2 (%)	% Impervious #1 #2 (%)	Pern #1 #2	B #1 #2	Link No.
R-LOT	0.7050 0.2350	2.000 2.000	99.00 1.000	.015 .030	.0009 .0094	1.000
R-RD	0.2480 0.0620	4.000 4.000	99.00 1.000	.015 .030	.0004 .0033	2.000
R-EXT	.00001 0.3600	2.000 2.000	99.00 1.000	.015 .050	0.000 .0172	3.000
R-EMB	.00001 0.3900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0080	4.000
R-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.001
TG-RD	0.2800 0.0700	2.000 2.000	99.00 1.000	.015 .030	.0006 .0050	5.000
TG-EMB	.00001 0.2900	10.00 10.00	99.00 1.000	.015 .050	0.000 .0069	6.000
TG-LOT	1.245 1.245	5.000 5.000	99.00 1.000	.015 .050	.0008 .0208	7.000
TG-EXT	.00001 0.4400	3.000 3.000	99.00 1.000	.015 .050	0.000 .0156	8.000
TG-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	5.001
EA1	1.472 0.3680	2.000 2.000	99.00 1.000	.015 .030	.0013 .0118	9.000
EA2	0.4240 0.1060	2.000 2.000	99.00 1.000	.015 .030	.0007 .0062	10.00
EA-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	9.001
P-LOT	2.138 0.7120	1.000 1.000	99.00 1.000	.015 .030	.0022 .0236	11.00
P-EXT	.00001 0.3900	1.000 1.000	99.00 1.000	.015 .050	0.000 .0254	12.00
P-EMB	.00001 0.5400	1.000 10.00	99.00 1.000	.015 .050	0.000 .0095	13.00
P-RD	0.4400 0.1100	1.000 1.000	99.00 1.000	.015 .030	.0010 .0089	14.00
P-OUT	.00001 0.5700	.0010 11.00	99.00 .0100	.015 .050	.0001 .0098	11.00
SW-LOT	3.278 1.092	1.000 1.000	99.00 1.000	.015 .030	.0028 .0295	15.00
SW-RD	0.1520 0.0380	1.000 1.000	99.00 1.000	.015 .030	.0006 .0051	16.00
SW-EMB	.00001 0.1000	10.00 10.00	99.00 1.000	.015 .050	0.000 .0040	17.00
SW-EX	.00001 2.160	1.000 1.000	99.00 1.000	.015 .050	0.000 .0618	18.00
SW-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	15.00
DUM-OUT	.00001 0.000	.0010 0.000	99.00 0.000	.015 0.00	.0001 0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak	Link Lag mins
R-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.2699	32.00	0.000
R-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1058	32.00	0.000
R-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0319	61.00	0.000
R-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0623	43.00	0.000
R-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.1620	40.00	0.000
TG-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1186	32.00	0.000
TG-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0487	43.00	0.000
TG-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.5108	32.00	0.000

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TG-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0412	54.00	0.000
TG-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.3066	40.00	0.000
EA1	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.5720	32.00	0.000
EA2	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1673	32.00	0.000
EA-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.7392	32.00	0.000
P-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.8163	33.00	0.000
P-EXT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0279	67.00	0.000
P-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0859	42.00	0.000
P-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1702	33.00	0.000
P-OUT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.2765	42.00	0.000
SW-LOT	30.476	5.000	25.00	0.000	2.500	55.951	32.284	1.238	33.00	0.000
SW-RD	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0583	32.00	0.000
SW-EMB	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.0213	41.00	0.000
SW-EX	30.476	5.000	25.00	0.000	2.500	55.951	32.284	0.1265	81.00	0.000
SW-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	0.3238	80.00	0.000
DUM-OUT	30.476	5.000	0.000	0.000	0.000	55.951	0.000	1.157	41.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m ³ /s)	Time to Peak	Peak Outflow (m ³ /s)	Total Inflow (m ³)	Vol. Avail	Basin Vol. Used	Stage Used
R-LOT	32.00	.2699	15.00	.0160	470.42	0.0000	360.97	0.3610
TG-LOT	32.00	.5108	22.00	.1600	1098.7	0.0000	259.08	0.1727
EA-OUT	32.00	.7392	18.00	.1700	1214.1	0.0000	390.73	0.3256
P-LOT	33.00	.8163	16.00	.0550	1424.2	0.0000	1032.6	0.5163
P-RD	33.00	.1702	16.00	.0300	281.75	0.0000	118.32	0.3944
SW-LOT	33.00	1.237	17.00	.1800	2188.0	0.0000	1068.0	0.3560

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	Width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Potts Hill Eastern Precinct - Developed, with Det 2 Simplified (MS version)

Results for period from 0: 0.0 1/ 1/1990
to 10: 0.0 1/ 1/1990

#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 5.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (km2) = 10.38
TOTAL OF SECOND SUB-AREAS (km2) = 9.28
TOTAL OF ALL SUB-AREAS (km2) = 19.66

SUMMARY OF CATCHMENT AND RAINFALL DATA

Link Label	Catch. Area #1 (ha)	Catch. Area #2 (ha)	Slope #1 (%)	Slope #2 (%)	% Impervious #1 (%)	% Impervious #2 (%)	Pern #1	Pern #2	B #1	B #2	Link No.
R-LOT	0.7050	0.2350	2.000	2.000	99.00	1.000	.015	.030	.0009	.0094	1.000
R-RD	0.2480	0.0620	4.000	4.000	99.00	1.000	.015	.030	.0004	.0033	2.000
R-EXT	.00001	0.3600	2.000	2.000	99.00	1.000	.015	.050	0.000	.0172	3.000
R-EMB	.00001	0.3900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0080	4.000
R-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.001
TG-RD	0.2800	0.0700	2.000	2.000	99.00	1.000	.015	.030	.0006	.0050	5.000
TG-EMB	.00001	0.2900	10.00	10.00	99.00	1.000	.015	.050	0.000	.0069	6.000
TG-LOT	1.245	1.245	5.000	5.000	99.00	1.000	.015	.050	.0008	.0208	7.000
TG-EXT	.00001	0.4400	3.000	3.000	99.00	1.000	.015	.050	0.000	.0156	8.000
TG-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	5.001
EA1	1.472	0.3680	2.000	2.000	99.00	1.000	.015	.030	.0013	.0118	9.000
EA2	0.4240	0.1060	2.000	2.000	99.00	1.000	.015	.030	.0007	.0062	10.00
EA-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	9.001
P-LOT	2.138	0.7120	1.000	1.000	99.00	1.000	.015	.030	.0022	.0236	11.00
P-EXT	.00001	0.3900	1.000	1.000	99.00	1.000	.015	.050	0.000	.0254	12.00
P-EMB	.00001	0.5400	1.000	10.00	99.00	1.000	.015	.050	0.000	.0095	13.00
P-RD	0.4400	0.1100	1.000	1.000	99.00	1.000	.015	.030	.0010	.0089	14.00
P-OUT	.00001	0.5700	.0010	11.00	99.00	.0100	.015	.050	.0001	.0098	11.00
SW-LOT	3.278	1.092	1.000	1.000	99.00	1.000	.015	.030	.0028	.0295	15.00
SW-RD	0.1520	0.0380	1.000	1.000	99.00	1.000	.015	.030	.0006	.0051	16.00
SW-EMB	.00001	0.1000	10.00	10.00	99.00	1.000	.015	.050	0.000	.0040	17.00
SW-EX	.00001	2.160	1.000	1.000	99.00	1.000	.015	.050	0.000	.0618	18.00

SW-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	15.00
DUM-OUT	.00001	0.000	.0010	0.000	99.00	0.000	.015	0.00	.0001	0.000	1.002

Link Label	Average Intensity (mm/h)	Init. #1 (mm)	Loss #2	Cont. #1 (mm/h)	Loss #2	Excess #1 (mm)	Rain #2	Peak Inflow (m ³ /s)	Time to Peak mins	Link Lag
R-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.1542	45.00	0.000
R-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0589	45.00	0.000
R-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0286	75.00	0.000
R-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0416	49.00	0.000
R-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.1216	45.00	0.000
TG-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0613	45.00	0.000
TG-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0326	49.00	0.000
TG-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.2910	45.00	0.000
TG-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0359	75.00	0.000
TG-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.2676	45.00	0.000
EA1	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.3103	45.00	0.000
EA2	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0928	45.00	0.000
EA-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.4031	45.00	0.000
P-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.4416	45.00	0.000
P-EXT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0266	85.00	0.000
P-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0539	50.00	0.000
P-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0916	45.00	0.000
P-OUT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.2065	50.00	0.000
SW-LOT	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.6727	45.00	0.000
SW-RD	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0325	45.00	0.000
SW-EMB	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.0152	46.00	0.000
SW-EX	23.634	5.000	25.00	0.000	2.500	65.902	39.943	0.1267	91.00	0.000
SW-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	0.3233	90.00	0.000
DUM-OUT	23.634	5.000	0.000	0.000	0.000	65.902	0.000	1.050	75.00	0.000

SUMMARY OF BASIN RESULTS

Link Label	Time to Peak	Peak Inflow (m ³ /s)	Time to Peak	Peak Outflow (m ³ /s)	Total Inflow (m ³)	----- Vol. Avail	Basin Vol. Used	----- Stage Used
R-LOT	45.00	.1542	19.00	.0160	558.02	0.0000	402.34	0.4023
TG-LOT	45.00	.2910	20.00	.1600	1317.0	0.0000	162.84	0.1086
EA-OUT	45.00	.4031	19.00	.1700	1438.1	0.0000	306.32	0.2553
P-LOT	45.00	.4416	151.0	.0740	1693.0	0.0000	1141.5	0.5708
P-RD	45.00	.0916	19.00	.0300	333.67	0.0000	106.63	0.3554
SW-LOT	45.00	.6727	20.00	.1800	2597.4	0.0000	1049.0	0.3497

SUMMARY OF BASIN OUTLET RESULTS

Link Label	No. of	S/D Factor (m)	Dia (m)	width (m)	Pipe Length (m)	Pipe Slope (%)
R-LOT	1.0	1.000		0.000	0.5000	0.2000
TG-LOT	1.0	1.000		0.000	0.5000	0.2000
EA-OUT	1.0	1.000		0.000	0.5000	0.2000
P-LOT	1.0	1.000		0.000	0.5000	0.2000
P-RD	1.0	1.000		0.000	0.5000	0.2000
SW-LOT	1.0	1.000		0.000	0.5000	0.2000

Run completed at: 8th July 2008 17:20:05



WorleyParsons

resources & energy

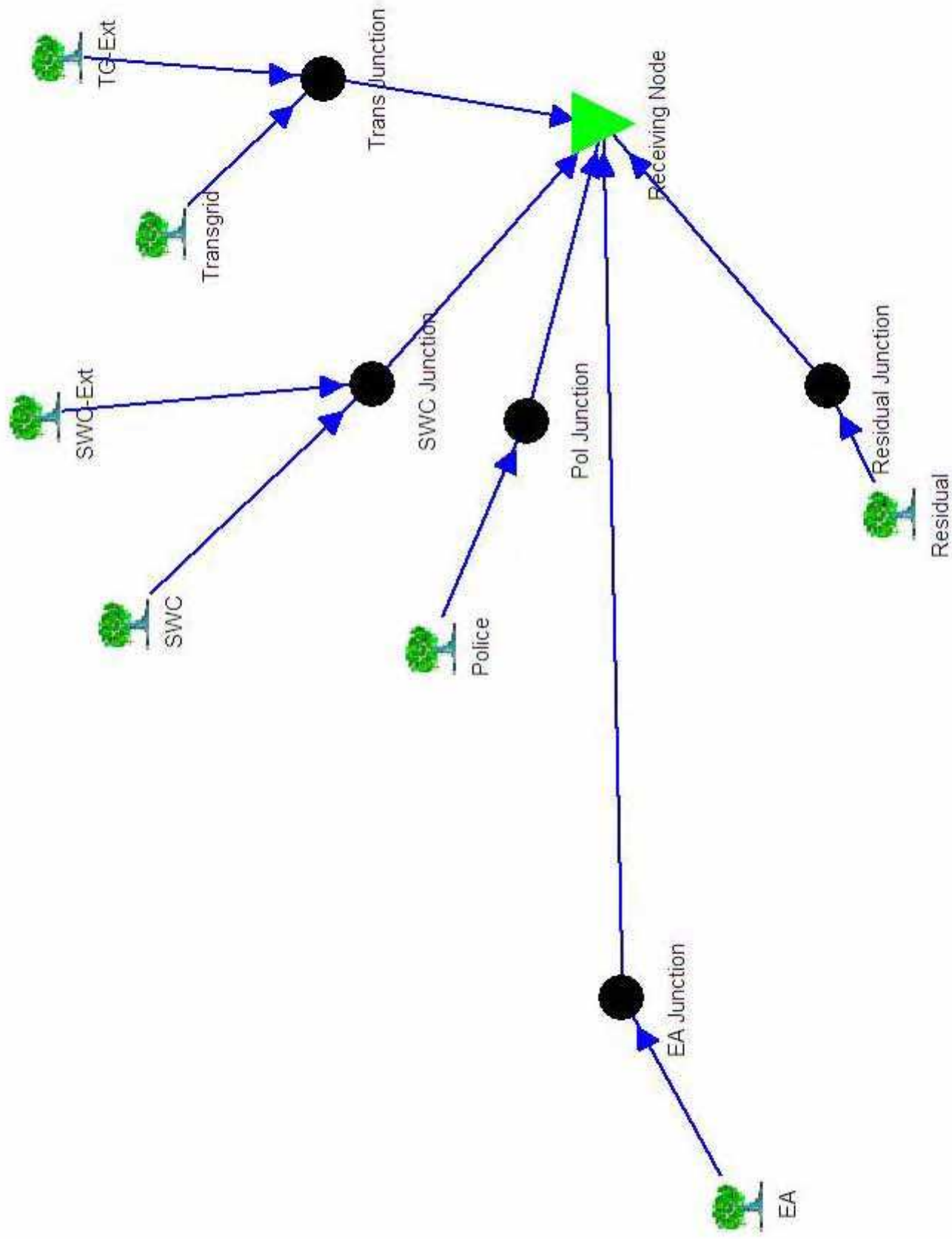
EcoNomics

LANDCOM, SYDNEY WATER & NPC

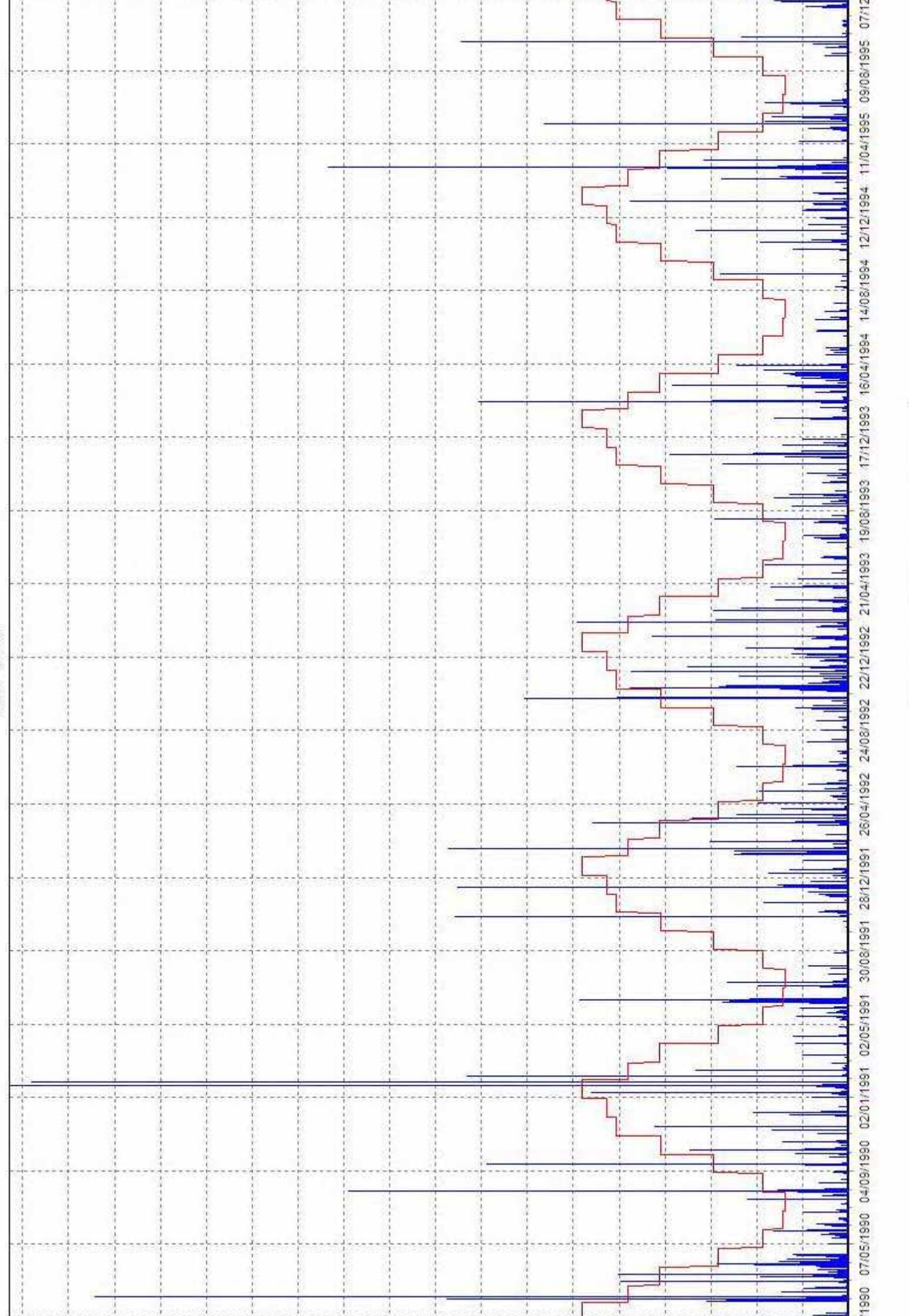
POTTS HILL EASTERN PRECINCT

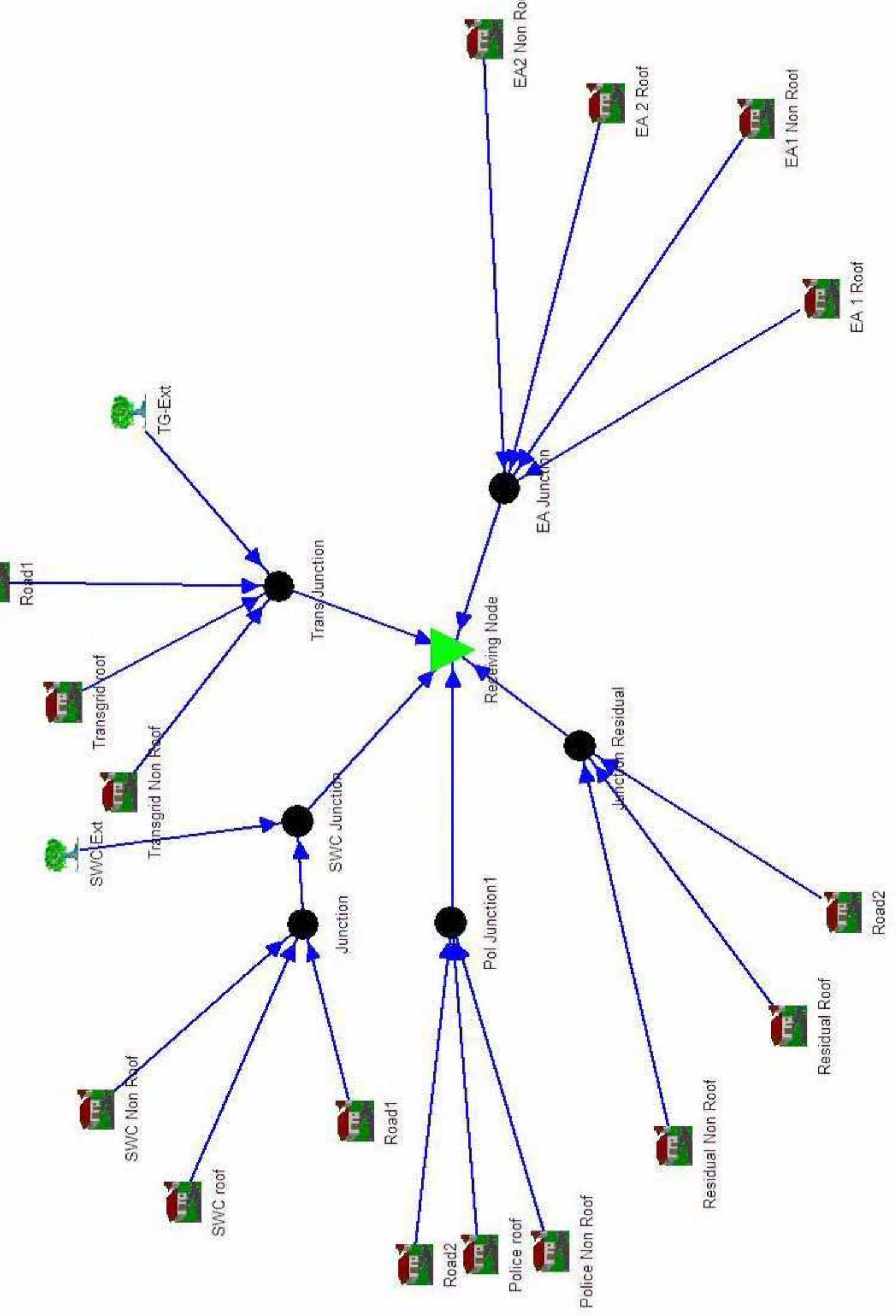
SITE SERVICES & STORMWATER MANAGEMENT REPORT

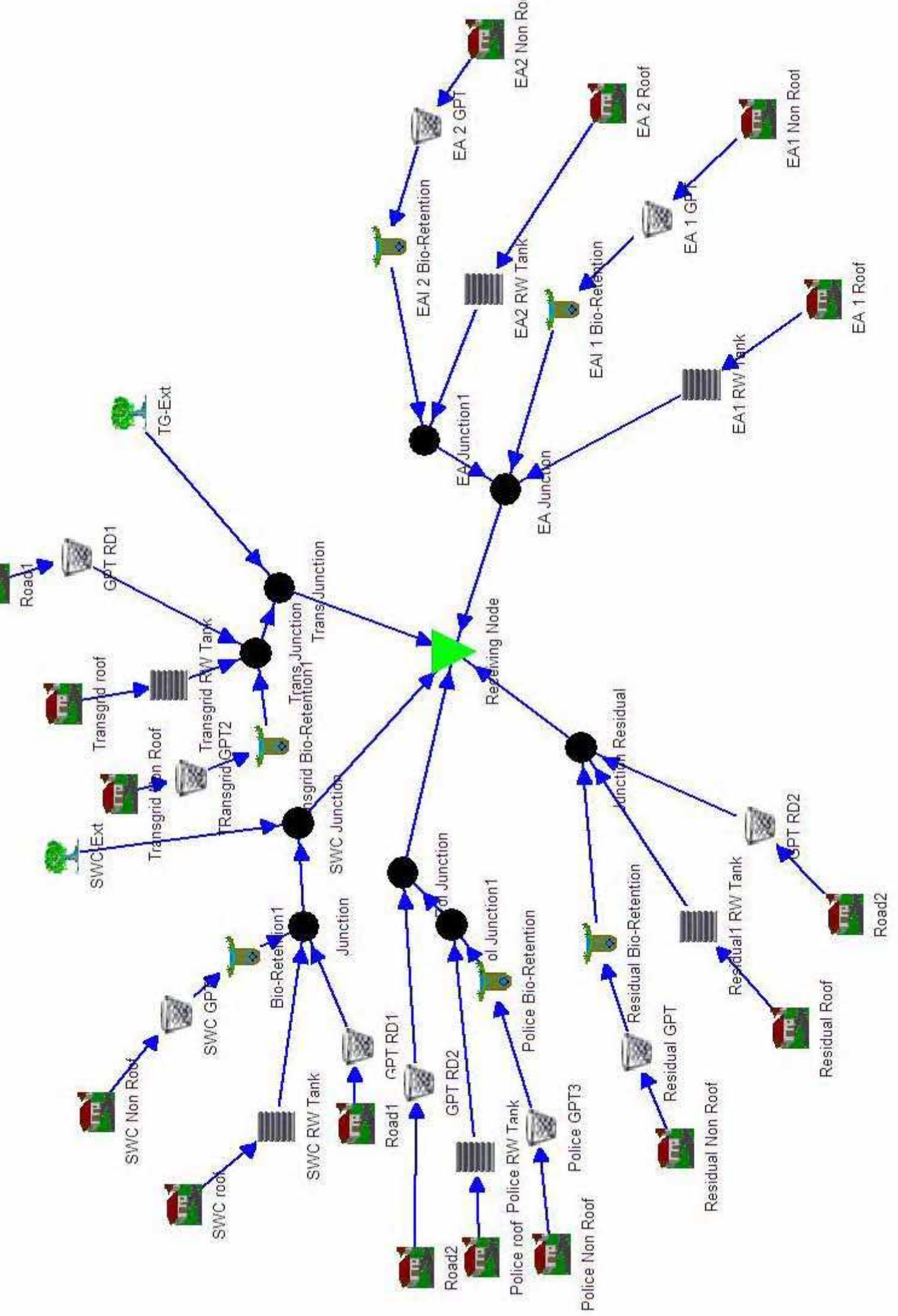
Appendix 6 - Music Result



7337 - treat2







Source nodes

Location,TG-Ext,SWC-Ext,Police Non Roof,SWC Non Roof,Transgrid Non Roof,Residual Non Roof,SWC roof,Road1 ,Transgrid roof,Police roof,Road2,Road1,Residual Roof,Road2,EA1 Non Roof,EA 1 Roof,EA2 Non Roof,EA 2 Roof
 ID,6,7,8,9,10,11,12,17,22,23,27,30,34,36,38,42,44,48
 Node
 Type,ForestSourceNode,ForestSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode,UrbanSourceNode
 Total Area (ha),0.49,1.92,2.72,3.62,2.23,1.07,0.9,0.15,0.55,0.68,0.53,0.35,0.265,0.31,1.47,0.37,0.42,0.1
 Area Impervious
 (ha),0,0,2.0468,2.72405,1.12487850877193,0.805175,0.9,0.119434210526316,0.55,0.68,0.422000877192983,0.2104605263157
 9,0.265,0.246830701754386,1.106175,0.37,0.31605,0.1
 Area Pervious
 (ha),0.49,1.92,0.6732,0.89595,1.10512149122807,0.264825,0,0.0305657894736842,0,0,0.107999122807018,0.13953947368421
 ,0,0.063169298245614,0.363825,0,0.10395,0
 Field Capacity (mm),80,80,80,80,80,80,80,80,80,80,80,80,80,80,80,80,80,80
 Pervious Area Infiltration Capacity coefficient -
 a,175,175,175,175,175,175,175,175,175,175,175,175,175,175,175,175,175
 Pervious Area Infiltration Capacity exponent -
 b,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1,3.1
 Impervious Area Rainfall Threshold (mm/day),1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4
 Pervious Area Soil Storage Capacity (mm),210,210,210,210,210,210,210,210,210,210,210,210,210,210,210,210,210
 Pervious Area Soil Initial Storage (% of Capacity),30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30
 Groundwater Initial Depth (mm),10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10
 Groundwater Daily Recharge Rate (%),35,35,35,35,35,35,35,35,35,35,35,35,35,35,35,35,35
 Groundwater Daily Baseflow Rate (%),20,20,20,20,20,20,20,20,20,20,20,20,20,20,20,20,20
 Groundwater Daily Deep Seepage Rate (%),0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
 Stormflow Total Suspended Solids Mean (log
 mg/L),1.6,1.6,2.15,2.15,2.15,2.15,1.3,1.3,2.43,2.43,1.3,2.43,2.15,1.3,2.15,1.3
 Stormflow Total Suspended Solids Standard Deviation (log
 mg/L),0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32,0.32
 Stormflow Total Suspended Solids Estimation
 Method,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean
 Stormflow Total Suspended Solids Serial Correlation,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
 Stormflow Total Phosphorus Mean (log
 mg/L),-1.1,-1.1,-0.6,-0.6,-0.6,-0.6,-0.89,-0.3,-0.89,-0.89,-0.3,-0.3,-0.89,-0.3,-0.6,-0.89,-0.6,-0.89
 Stormflow Total Phosphorus Standard Deviation (log
 mg/L),0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25,0.25
 Stormflow Total Phosphorus Estimation
 Method,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean
 Stormflow Total Phosphorus Serial Correlation,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
 Stormflow Total Nitrogen Mean (log
 mg/L),-0.05,-0.05,0.3,0.3,0.3,0.3,0.3,0.34,0.3,0.3,0.34,0.34,0.3,0.34,0.3,0.3,0.3
 Stormflow Total Nitrogen Standard Deviation (log
 mg/L),0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19,0.19
 Stormflow Total Nitrogen Estimation
 Method,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean
 Stormflow Total Nitrogen Serial Correlation,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
 Baseflow Total Suspended Solids Mean (log mg/L),0.78,0.78,1.2,1.2,1.2,1.2,0,0,0,0,0,0,0,0,0,0,0
 Baseflow Total Suspended Solids Standard Deviation (log
 mg/L),0.17,0.17,0.17,0.17,0.17,0.17,0,0,0,0,0,0,0,0,0,0,0
 Baseflow Total Suspended Solids Estimation
 Method,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean
 Baseflow Total Suspended Solids Serial Correlation,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
 Baseflow Total Phosphorus Mean (log mg/L),-1.52,-1.52,-0.85,-0.85,-0.85,-0.85,0,0,0,0,0,0,0,0,-0.85,0,-0.85,0
 Baseflow Total Phosphorus Standard Deviation (log mg/L),0.19,0.19,0.19,0.19,0.19,0.19,0,0,0,0,0,0,0,0,0,0,0.19,0.19,0
 Baseflow Total Phosphorus Estimation
 Method,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean
 Baseflow Total Phosphorus Serial Correlation,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
 Baseflow Total Nitrogen Mean (log mg/L),-0.52,-0.52,0.11,0.11,0.11,0.11,0,0,0,0,0,0,0,0,0.11,0,0.11,0
 Baseflow Total Nitrogen Standard Deviation (log mg/L),0.12,0.12,0.12,0.12,0.12,0.12,0,0,0,0,0,0,0,0,0.12,0,0.12,0
 Baseflow Total Nitrogen Estimation
 Method,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean,Mean
 Baseflow Total Nitrogen Serial Correlation,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
 OUT - Mean Annual Flow
 (ML/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
 OUT - TSS Mean Annual Load
 (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
 OUT - TP Mean Annual Load
 (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
 OUT - TN Mean Annual Load
 (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
 OUT - Gross Pollutant Mean Annual Load
 (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00

No Imported Data Source nodes

USTM treatment nodes

Location,Bio-Retention1,SWC RW Tank,Transgrid Bio-Retention1,Police RW Tank,Police Bio-Retention,Residual
 Bio-Retention,Residual1 RW Tank,EA1 Bio-Retention,EA1 RW Tank,EA2 Bio-Retention,EA2 RW Tank,Transgrid RW Tank
 ID,14,15,20,24,25,33,35,40,41,46,47,50
 Node
 Type,BioRetentionNode,RainwaterTankNode,BioRetentionNode,RainwaterTankNode,BioRetentionNode,BioRetentionNode,Rainwa
 terTankNode,BioRetentionNode,RainwaterTankNode,BioRetentionNode,RainwaterTankNode,RainwaterTankNode
 Lo-flow bypass rate (cum/sec),0,0,0,0,0,0,0,0,0,0,0,0,0
 Hi-flow bypass rate (cum/sec),100,100,100,100,100,100,100,100,100,100,100,100,100
 Inlet pond volume, ,0, , ,0, ,0, ,0
 Area (sqm),2285,295,1329,222,1700,665,87,920,120,260,34,181
 Extended detention depth (m),0.5,0.2,0.5,0.2,0.5,0.2,0.5,0.2,0.5,0.2,0.5,0.2,0.2
 Permanent pool volume (cum), ,590, ,444, , ,174, ,240, ,68,363
 Proportion vegetated, ,0, ,0, ,0, ,0, ,0
 Equivalent pipe diameter (mm), ,150, ,150, , ,150, ,150, ,150,150
 Overflow weir width (m),2,10,2,10,2,2,10,2,10,2,10,10
 Notional Detention Time (hrs), ,0.699, ,0.526, , ,0.206, ,0.284, ,80.6E-3,0.429
 Orifice discharge coefficient, ,0.6, ,0.6, , ,0.6, ,0.6, ,0.6,0.6
 weir coefficient,1.7,1.7,1.7,1.7,1.7,1.7,1.7,1.7,1.7,1.7,1.7,1.7,1.7

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Number of CSTR cells,3,2,3,2,3,2,3,2,3,2,3,2,2
Total Suspended Solids k (m/yr),8000,400,8000,400,8000,8000,400,8000,400,8000,400,400
Total Suspended Solids C* (mg/L),20,12,20,12,20,12,20,12,20,12,20,12
Total Suspended Solids C** (mg/L),,12,,12,,12,,12,,12,12
Total Phosphorus k (m/yr),6000,300,6000,300,6000,6000,300,6000,300,6000,300,300
Total Phosphorus C* (mg/L),0.13,0.13,0.13,0.13,0.13,0.13,0.13,0.13,0.13,0.13,0.13,0.13
Total Phosphorus C** (mg/L),,0.13,,0.13,,0.13,,0.13,,0.13,0.13
Total Nitrogen k (m/yr),500,40,500,40,500,500,40,500,40,500,40,40
Total Nitrogen C* (mg/L),1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4,1.4
Total Nitrogen C** (mg/L),,1.4,,1.4,,1.4,,1.4,,1.4,1.4
Threshold hydraulic loading for C** (m/yr),,3500,,3500,,3500,,3500,,3500,3500
Extraction for Re-use,Off,On,Off,On,Off,On,Off,On,Off,On,Off,On,On
Annual Re-use Demand - scaled by daily PET (ML),,0,,0,,0,,0,,0,0
Constant Daily Re-use Demand (kL),,6.3,,4.7,,1.9,,2.6,,0.7,3.9
User-defined Annual Re-use Demand (ML),,0,,0,,0,,0,,0,0
Percentage of User-defined Annual Re-use Demand Jan,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Feb,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Mar,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Apr,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand May,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Jun,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Jul,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Aug,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Sep,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Oct,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Nov,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Percentage of User-defined Annual Re-use Demand Dec,,8.33333333333333,,8.33333333333333,,8.33333333333333,
8.33333333333333,,8.33333333333333,8.33333333333333
Filter area (sqm),1143,,695,,850,333,,460,,130,,
Filter depth (m),1,,1,,1,1,,1,,1,,
Filter median particle diameter (mm),5,,5,,5,5,,5,,5,,
Saturated hydraulic conductivity (mm/hr),100,,100,,100,100,,100,,100,,
voids ratio,0.3,,0.3,,0.3,0.3,,0.3,,0.3,,
Length (m),,,,,,,,,,,,,
Bed slope,,,,,,,,,,,,
Base width (m),,,,,,,,,,,,,
Top width (m),,,,,,,,,,,,,
vegetation height (m),,,,,,,,,,,,,
Proportion of upstream impervious area treated,,,,,,,,,,,,
Seepage Rate (mm/hr),3.3,0.3,3.3,0.3,3.3,0.3,3.3,0.3,3.3,0.3,3.3,0.3
Evap Loss as proportion of PET,,0,,0,,0,,0,,0,0
Depth in metres below the drain pipe,0,,0,,0,0,,0,,0,,
IN - Mean Annual Flow (ML/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - TSS Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - TP Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - TN Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - Gross Pollutant Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - Mean Annual Flow (ML/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - TSS Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - TP Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - TN Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - Gross Pollutant Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00

Generic treatment nodes
Location,SWC GPT1,GPT RD1,Transgrid GPT2,Police GPT3,GPT RD2,GPT RD1,Residual GPT,GPT RD2,EA 1 GPT,EA 2 GPT
ID,13,18,19,26,28,31,32,37,39,45
Node Type,GPTNode,GPTNode,GPTNode,GPTNode,GPTNode,GPTNode,GPTNode,GPTNode,GPTNode,GPTNode
Lo-flow bypass rate (cum/sec),0,0,0,0,0,0,0,0,0,0
Hi-flow bypass rate (cum/sec),100,100,100,100,100,100,100,100,100,100
Flow Transfer Function
Input (cum/sec),0,0,0,0,0,0,0,0,0,0
Output (cum/sec),0,0,0,0,0,0,0,0,0,0
Input (cum/sec),10,10,10,10,10,10,10,10,10,10
Output (cum/sec),10,10,10,10,10,10,10,10,10,10
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Input (cum/sec),,,,,,,,,,,,,
Output (cum/sec),,,,,,,,,,,,,
Gross Pollutant Transfer Function
Input (kg/ML),0,0,0,0,0,0,0,0,0,0
Output (kg/ML),0,0,0,0,0,0,0,0,0,0
Input (kg/ML),100,100,100,100,100,100,100,100,100,100
Output (kg/ML),5.5,5.5,5.5,5.5,5.5,5.5,5.5,5.5
```

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Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Input (kg/ML), , , , , , , , ,
Output (kg/ML), , , , , , , , ,
Total Nitrogen Transfer Function
Input (mg/L),0,0,0,0,0,0,0,0,0,0
Output (mg/L),0,0,0,0,0,0,0,0,0,0
Input (mg/L),100,100,100,100,100,100,100,100,100,100
Output (mg/L),87,87,87,87,87,87,87,87,87,87
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Total Phosphorus Transfer Function
Input (mg/L),0,0,0,0,0,0,0,0,0,0
Output (mg/L),0,0,0,0,0,0,0,0,0,0
Input (mg/L),100,100,100,100,100,100,100,100,100,100
Output (mg/L),70,70,70,70,70,70,70,70,70,70
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Total Suspended Solids Transfer Function
Input (mg/L),0,0,0,0,0,0,0,0,0,0
Output (mg/L),0,0,0,0,0,0,0,0,0,0
Input (mg/L),100,100,100,100,100,100,100,100,100,100
Output (mg/L),30,30,30,30,30,30,30,30,30,30
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
Input (mg/L), , , , , , , , ,
Output (mg/L), , , , , , , , ,
IN - Mean Annual Flow (ML/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - TSS Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - TP Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - TN Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
IN - Gross Pollutant Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - Mean Annual Flow (ML/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - TSS Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - TP Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - TN Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00
OUT - Gross Pollutant Mean Annual Load (kg/yr),0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00

```

Other nodes

```

Location,Receiving Node,Pol Junction1,Junction Residual ,Trans Junction ,SWC Junction,Junction,Trans Junction,Pol
Junction ,EA Junction ,EA Junction1
ID,1,2,3,4,5,16,21,29,43,49
Node
Type,ReceivingNode,JunctionNode,JunctionNode,JunctionNode,JunctionNode,JunctionNode,JunctionNode,Junct

```

ionNode.JunctionNode

[illegible]

Links

[illegible]

Source node

ID, 4, 5, 6, 7, 9, 13, 12, 14, 15, 17, 18, 16, 10, 19, 20, 21, 23, 24, 8, 26, 25, 28, 29, 2, 30, 11, 32, 33, 34, 35, 36, 37, 41, 40, 39, 38, 42, 43, 48, 47, 46, 45, 44, 49, 27, 22, 50, 3, 31

Target node

ID, 1, 1, 4, 5, 13, 14, 15, 16, 16, 18, 16, 5, 19, 20, 21, 4, 24, 2, 26, 25, 2, 29, 1, 29, 31, 32, 33, 3, 35, 3, 37, 3, 43, 43, 40, 39, 41, 1, 47, 49, 49, 46, 45, 43, 28, 50, 21, 1, 21

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]



WorleyParsons

resources & energy

EcoNomics

LANDCOM, SYDNEY WATER & NPC

POTTS HILL EASTERN PRECINCT

SITE SERVICES & STORMWATER MANAGEMENT REPORT

Appendix 7 - Curriculum Vitae (Michael J Shaw)



Resume

1. SUMMARY

Michael is a senior civil engineer with over 15 years experience in the fields of hydrology, stormwater management and urban infrastructure design. He manages a team of engineers and civil designers within the Urban Infrastructure Group of Worley Parsons. Michael has worked on many civil design projects ranging from development of large scale strategic masterplans to detailed design of stormwater management facilities and urban infrastructure for residential subdivisions. His expertise lies in solving complicated drainage problems, water sensitive urban design (WSUD), detailed civil design, understanding the local government approvals process and managing multidisciplinary teams. The urban Infrastructure Group that Michael leads covers all facets of civil engineering for urban development from due diligence through to approvals, details design, superintendency and certification.

2. EXPERIENCE

	Positions held -& Location
April 2008-Present	► Manager, Urban Infrastructure, Environment Group - Worley Parsons.
Aug. 2007-March 2008	► Principal Engineer – Urban Infrastructure - Worley Parsons incorporating Patterson Britton & Partners, Sydney, NSW, Australia;
Nov. 1997-Jul. 2007	► Senior Associate – Urban Infrastructure - Patterson Britton & Partners, Sydney, NSW, Australia;
Aug. 1996-Oct 1997	► Water Resources Engineer – Willing & Partners, Sydney, NSW, Australia;
Feb. 1991-Aug. 1994	► Design Engineer, Development Engineer, Investigation Engineer & Survey Assistant – Ryde City Council, Sydney, NSW, Australia.
	Standout Projects
	► Stormwater Management Strategies(SMS)
	-Port Jackson South Stormwater Management Plan (2,870ha catchment);
	-Drummoyne Council Stormwater Quality Strategy (830ha catchment);
	-Lake Illawarra South Stormwater Quality Strategy (1,548ha catchment);
	-Elliot Lake Stormwater Quality Strategy (1,220ha catchment);
	-Scotland Island SMS (53ha catchment);
	-Corks Lane Milton, DA Stage SMS (150 lot residential subdivision);
	-Pasadena, Church Point, DA Stage Stormwater Management and Reuse Strategy (mixed use dev.);
	-Yallambee Ave West Gosford, DA Stage SMS (100 lot residential subdivision)
	-CSIRO Greystanes, Employment Lands SMS (60ha industrial site);



Resume

	-Warriewood Valley, Sector 3, Rezoning Stage SMS (<i>130 lot residential subdivision</i>);
	-Warriewood Valley, Sector 8, Rezoning to Subdivision Certificate Stage SMS (<i>140 lot residential subdivision</i>);
	-Warriewood Valley, Buffer Areas 1 and 2, Rezoning and DA Stage SMS (<i>300 lot residential subdivision</i>);
	-Warriewood Valley, Buffer Area 3, Rezoning and DA Stage SMS (<i>250 townhouse subdivision</i>);
	-Macarthur Square Regional Centre Masterplan DA Stage WSUD Strategy (<i>61ha residential subdivision</i>);
	-Department of Defence Site, Ermington (" <i>Ermington Riverfront</i> ") DA Stage SMS (<i>20ha residential subdivision</i>);
	-West Kembla Grange, Wollongong, Aquatic Issues Assessment (<i>858ha catchment</i>);
	-Eastwood Quarry, Masterplan/Rezoning Stage SMS (<i>20ha residential subdivision</i>);
	-Perentie and Dawes Road Masterplan, Belrose, Stormwater Quality Strategy (<i>30ha residential subdivision</i>);
	-Walter Road, Ingleside DA Stage SMS (<i>15ha rural residential subdivision</i>);
	-Domayne, Austlink Park Belrose SMS (<i>large commercial use development</i>);
	-Grassmere LES, Camden SMS (<i>50ha rural residential subdivision</i>); and
	-Warriewood Valley (<i>Sectors C, D, & 12</i>) Rezoning Stage SMS (<i>100 lot residential subdivision</i>).
	► Water Sensitive Urban Design (WSUD)
	-Sand Filtration Unit, Drummoyne Park (<i>ie Stormwater Treatment</i>);
	-Barnwell Park Golf Course Stormwater Treatment and Reuse;
	-Powell Creek Reserve Eco Carpark
	-Warriewood Valley, Sector 10, Detailed Design of WSUD elements (<i>bio-retention systems and wetland for 170 lot residential subdivision</i>);and
	-Warriewood Valley, Sector 12, Detailed Design of WSUD elements (<i>bio-retention systems and wetland for 180 lot residential subdivision</i>).
	► Riparian/Creek Design/Investigation
	-Wollondilly Shire Riparian Corridor Definition Study;
	-Parsley Bay, Woollahra, Creekline Rehabilitation;
	-Embankment Stabilisation Design, Koloona Ave, Byarong Creek ,Wollongong; and
	-Embankment Stabilisation Design, 5 sites along Cabbage Tree Creek, Towradgi Creek and Byarong Creek, Wollongong.
	► Civil Subdivision Design
	-Tweed Road, Lithgow, Detailed Design of Civil Infrastructure (<i>roads, drainage, water, sewer and all other utility services</i>) for a 38 lot residential subdivision;