



PITT TOWN MAJOR PROJECT APPLICATION WATER CYCLE REPORT

November 2007

Report No. X06026.01-02

Prepared for Johnson Property Group



BROWN CONSULTING

Engineers & Managers

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November 2007

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PITT TOWN MAJOR PROJECT APPLICATION

WATER CYCLE REPORT

FOR JOHNSON PROPERTY GROUP

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EXECUTIVE SUMMARY

Water Cycle Management Outcomes

The analysis of the water cycle management for the extended Pitt Town development which can cater for up to 915 dwellings shows that both the water quantity and quality issues can be managed within the requirements of the DCP. Also, there are opportunities to harvest rainwater through the joint use of rainwater tanks and community wetland facilities, thus reducing the demand on the public water supply systems and reducing the load on the local drainage system.

PITT TOWN MAJOR PROJECT APPLICATION

WATER CYCLE REPORT

FOR JOHNSON PROPERTY GROUP

1 PREAMBLE

This report has been written to provide input to the Environmental Assessment being prepared by Don Fox Planning for a Major Project Application for the site. The text provided covers the following:

3.2 Water Management

- 3.2.1 *General*
- 3.2.2 *Water Quantity & Detention*
- 3.2.3 *Water Quality*
- 3.2.4 *Riparian Corridors and Amenity.*

It is to be prepared in accordance to the principles set out in the December 2005 Pitt Town DCP.

2 REFERENCES

Connell Wagner (April 2002). *Hawkesbury City Council - Pitt Town Local Environmental Study*. Reference I119.01.GE.

Connell Wagner (April 2003). *Hawkesbury City Council - Pitt Town Local Environmental Study*. Reference I119.01.GE Revision 2.

Hawkesbury City Council (November 2004). *DRAFT Hawkesbury Development Control Plan. Part E. Specific Areas. Chapter 4. Pitt Town.*

Hawkesbury City Council (December 2005). *Hawkesbury Development Control Plan. Part E. Specific Areas. Chapter 4. Pitt Town.*

3 APPENDICES

Appendix A **Land Capability**

Appendix B **Model Results**

APPENDIX A

LAND CAPABILITY

3.2 WATER MANAGEMENT

3.2.1 GENERAL

The overall stormwater management strategy for Pitt Town and the proposed new developments has been developed in the last few years and is outlined in the following publications:

1. Connell Wagner (April 2002). *Hawkesbury City Council - Pitt Town Local Environmental Study*. Reference I119.01.GE.
2. Connell Wagner (April 2003). *Hawkesbury City Council - Pitt Town Local Environmental Study*. Reference I119.01.GE Revision 2.
3. Hawkesbury City Council (December 2005). *Hawkesbury Development Control Plan. Part E. Specific Areas. Chapter 4. Pitt Town*.

The Stormwater Master Plan set out in the Pitt Town DCP is based on the Medium Growth Scenario in the Connell Wagner 2003 Report. This is depicted in Figure 4.3 in that report. The key statistic that this is based on is shown in **Table 1**.

Table 1. Pitt Town – DCP Development Scenario

Housing Type	Number of Dwellings	Population
Rural Village	650	1625
Rural Village Fringe	60	150
TOTAL	710	1775

The zoning precincts and distribution of lots are shown in **Figure 1** and **Table 2**.

Note that the dwelling numbers shown in **Table 1** are slightly higher than those resulting from a calculation of lot numbers based on site area and the density controls set out in LEP Amendment No 145. **Table 2** is based on site area and the density controls from LEP Amendment No 145. The difference in lot numbers is not regarded as material to the calculation which follows.

Table 2. Pitt Town Development – Breakdown by Area

Area	Precinct	LEP 145		Proposed	
		Lot size	Lot Numbers	Lot size	Lot Numbers
1	Fernadell	750m ² and 4000m ²	166	550m ² to 2300m ²	210
2	Bona Vista	750m ² and 1500m ²	226	650m ² to 1389m ²	246
3	Cleary	3 lots per ha	22	2000m ² to 11222m ²	112
4	Thornton	2 Lots per ha	25	2000m ² to 10470m ²	69
5	Blighton	nil	2	3671m ² to 25997m ²	22
Sub-total lots controlled by JPG			441		659
6	Central Sector - DCP Others	5 lots per ha	176	5 lots per ha	176
7	Cattai - DCP Others	2 lots per ha	80	2 lots per ha	80
Sub-total lots outside control of JPG			256		256
Total Lots			697		915

In summary, this proposal differs from the DCP Master Plan in the following ways:

- The development densities on Fernadell, Bona Vista, Cleary's, Thornton's and Blighton have been increased.
- The development footprint has been increased in the northern part of the site beyond Hall Street, with larger lots and open space in the expanded area.
- The area deferred from LEP Amendment No 145 has now been included.
- The densities on other sites have remained the same.
- The total number of additional dwellings has increased from 697 to 915.

Figures 1 & 2 show the extent of the proposed development identified in the DCP and then in the revised layout for the major project application.

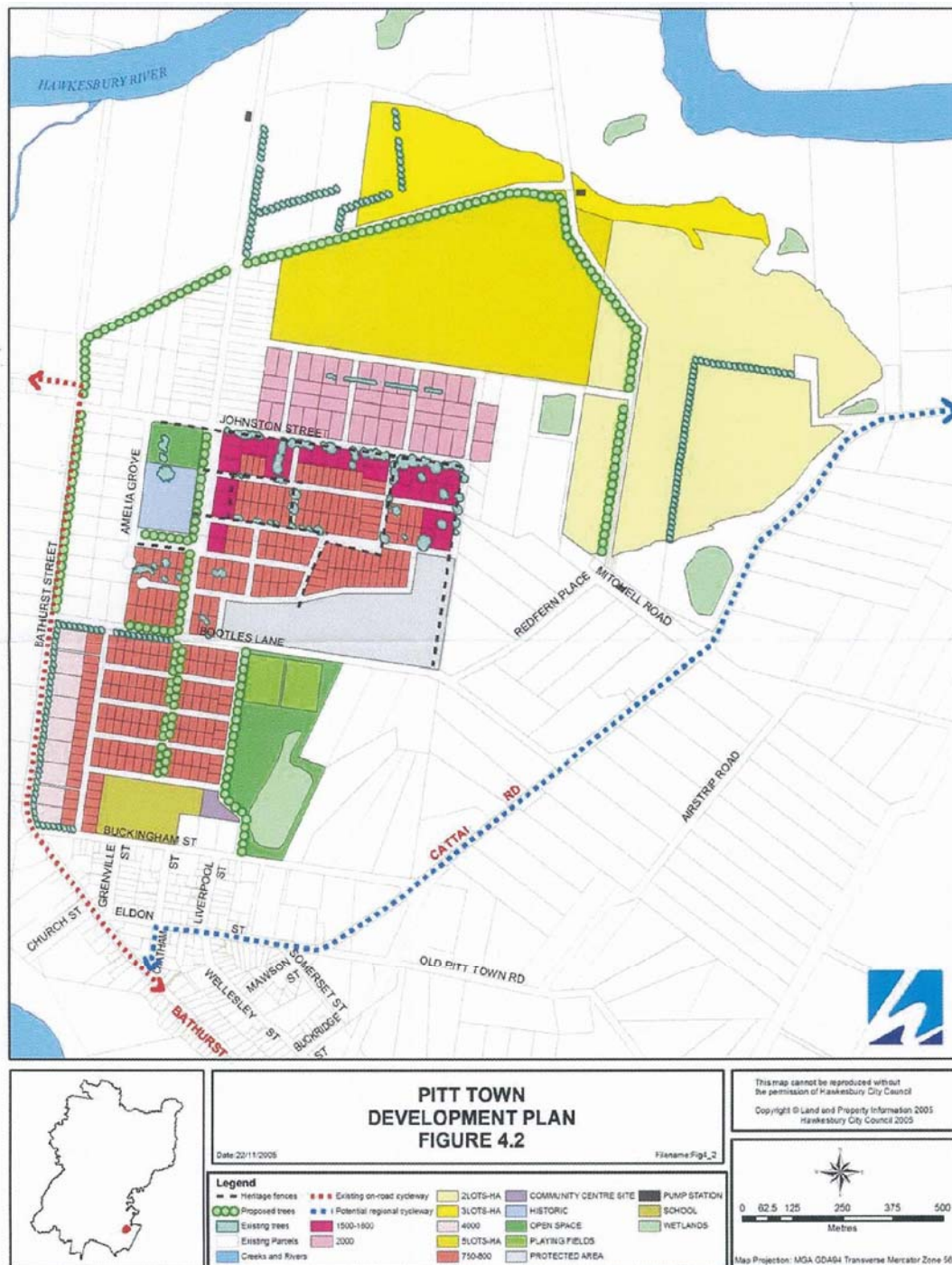


Figure 1 DCP Master Plan

The stormwater management strategy as set out in the LES and DCP Documents is unchanged in objective but has been fine tuned to cater for the additional number of dwellings being serviced. The more intensive use and increased imperviousness has resulted in an increase in flowrates and pollutant generation. The general form of the drainage catchments has not been changed and the type and location of the detention and water quality facilities has remained the same, but the capacity of the facilities has been adjusted to match the new loadings.

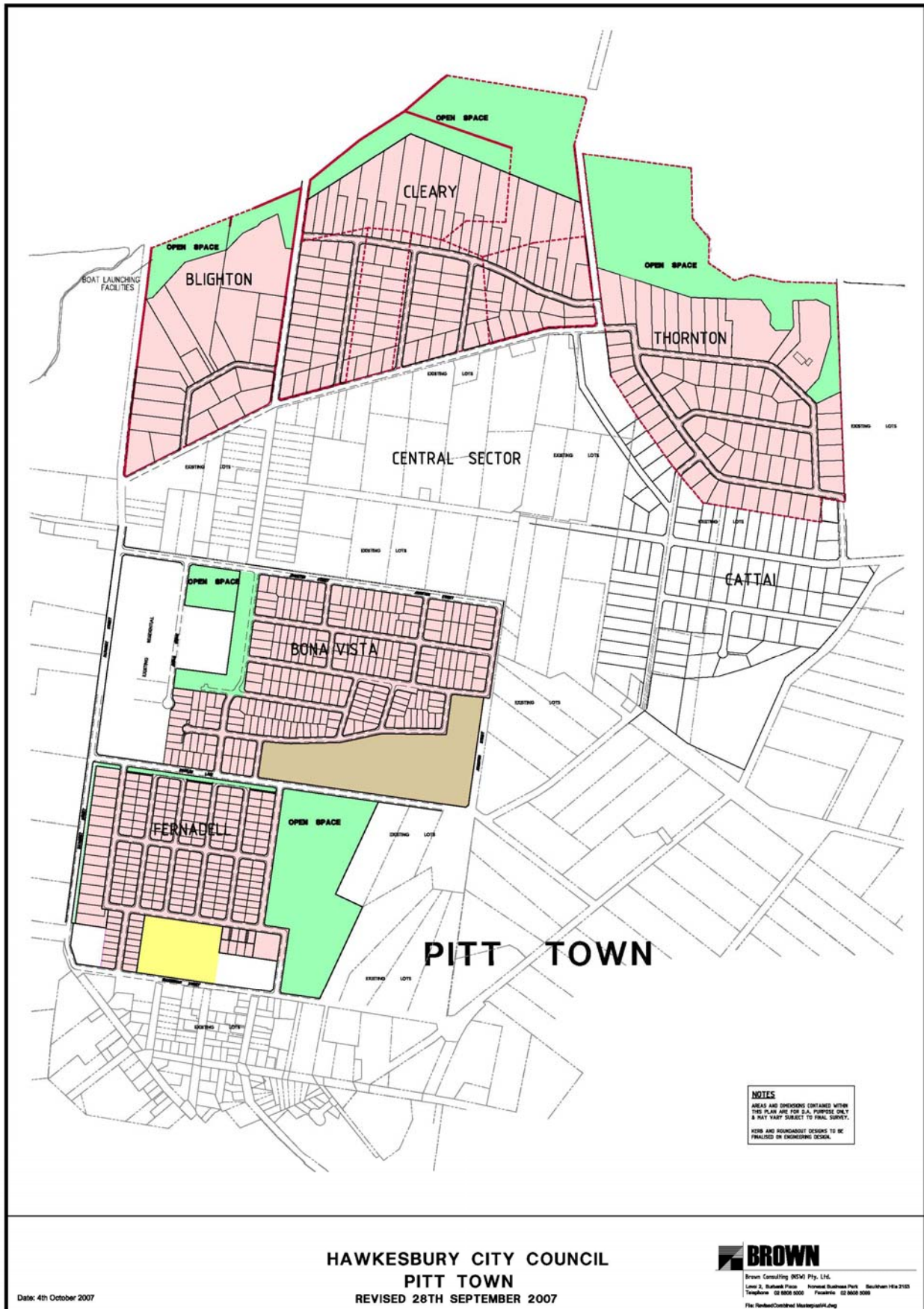


Figure 2 Revised Master Plan

The requirements of the DCP are set out in the following extract from the Hawkesbury DCP December 2005.

EXTRACT from Hawkesbury DCP – Dec 2005

4.12 STORMWATER MANAGEMENT

4.12.1 Aims

- The amount of stormwater generated within Pitt Town up to the 100 ARI event, and discharged to the Hawkesbury-Nepean River System is reduced or not increased.
- The water quality of stormwater discharged up to the 100 ARI event to the Hawkesbury-Nepean River System is improved or not worsened.
- The risk of localised flooding within Pitt Town is minimised and not increased.

4.12.2 Rules

- a) The sites shown as stormwater basins on the Pitt Town Development Plan Figure E4. 2 are to be set aside for stormwater management purposes. The land will be acquired when required by Council by using funds from the Water Management fees.
- b) The water quality of stormwater discharged to the Hawkesbury-Nepean River System must comply with the standards set out in Table E4.3 below.

Table E4.3: Water Quality Standards

Pollutant	Treatment standard
Suspended solids	80% retention of the average annual load.
Total phosphorous	45% retention of the average annual load.
Total nitrogen	45% retention of the average annual load.
Litter	Retention of litter greater than 50mm for flows up to 25% of the 1 year ARI peak flow.
Coarse sediment	Retention of sediment coarser than 0.125mm for flows up to 25% of the 1 year ARI peak flow.
Oil and grease	In areas with concentrated hydrocarbon deposition, no visible oils for flows up to 25% of the 1 year ARI peak flow.

Source: NSW Environment Protection Authority. Managing Urban Stormwater: Council Handbook. November 1997

- c) A stormwater management plan must accompany development applications for subdivision and must be consistent with the Pitt Town Development Plan. The plan must be consistent with water-sensitive urban design principles.
- d) An erosion and sedimentation management plan must accompany development applications for subdivision and must meet the requirements set out in Part C Chapter 4.
- e) The stormwater system shall be generally in accordance with the adopted Water Management Plan for Pitt Town.

3.2.2 WATER QUANTITY & DETENTION

The hydrology of the area was modelled using *XP-RAPTS* for the 100 year Average Recurrence Interval event for durations from 20 minutes to 9 hours. The detention facilities specified in each catchment were sized to ensure that peak flows in the downstream waterway did not exceed pre-development values (i.e. they are sized on the proposed development densities compared to the present development densities). No detention facilities are to be provided for catchments that discharge directly into the Hawkesbury River to minimise co-incidence of peak runoff from Pitt Town site with the peak flow in the River. However, the water quality treatment facilities will have some ameliorative effect on peak flow increases.

The peak discharge for the 100 year Average Recurrence Interval event and associated detention facilities are listed in **Table 3**.

Table 3. Summary of Development Area Hydrology and Detention Facilities

Catchment	Proposed Lots	Peak Flow Pre Q_{100} (m^3/s)	Peak Flow Post Q_{100} (m^3/s)	Storage Provided (m^3)	Comments
Bona Vista West & Fernadell	359	9.6	8.8	27,000	Storage may be a combination of detention basin and sports-fields
Bona Vista East	97	3.6	3.3	-	No storage required as peak flow does not exceed existing
Central Sector & Cattai	Not detailed in this submission	-	-	-	Separate property to this submission.
Western Sector (Blighon)	48	4.0	4.2	-	Catchment discharges directly to Hawkesbury River
Northern Sector (Cleary)	302 + Future Central Sector Lots	9.6	15.9	-	Catchment discharges directly to Hawkesbury River
Eastern Sector (Thornton)	168	2.1	4.3	-	Catchment discharges directly to Hawkesbury River

The general location and size of the various detention facilities is shown in **Figure 3**.

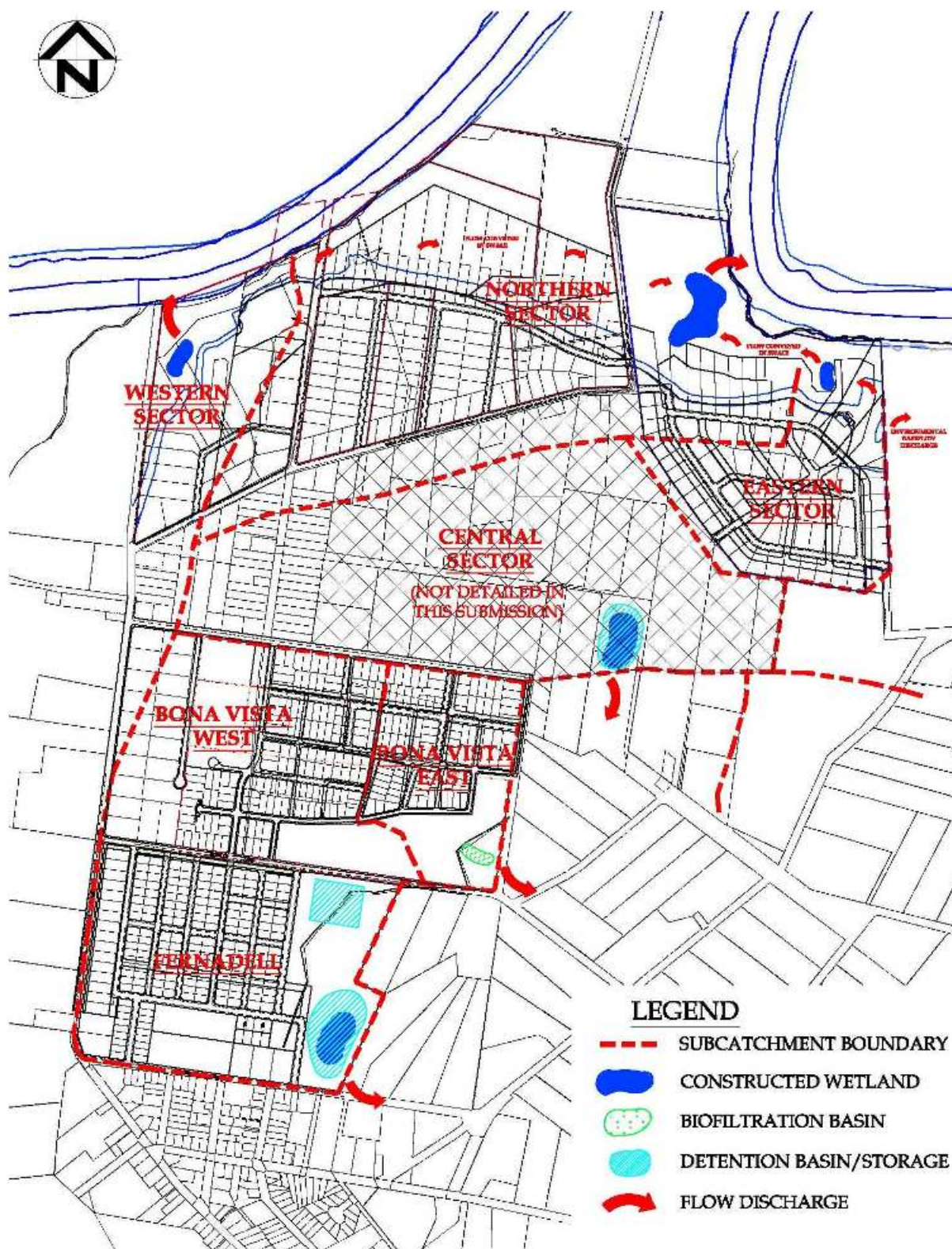


Figure 3 General Layout of Water Quantity and Water Quality Facilities

3.2.3 WATER QUALITY

The water quality of the area was modelled using the *MUSIC* water quality model. The treatment facilities specified in each catchment were sized to ensure that annual loads met the required pollutant retention guidelines.

The treatment of the stormwater runoff is proposed to be undertaken using a combination of Gross Pollutant Traps (GPT), swales, wetlands and bioretention basins. The types of water quality facilities for each of the catchments are listed in **Table 4**.

Table 4. Summary of Development Area Water Quality Facilities

Catchment	Proposed Treatment Train	Component Sizes	Comments
Bona Vista West & Fernadell	GPTs, Swales, Wetland	Wetland – surface area 7,500 m ²	
Bona Vista East	GPT, Swale, Bioretention Basin	Bioretention basin – surface area 2,300 m ²	
Central Sector (Wells)	Not detailed in this submission	-	Separate property to this submission.
Western Sector (Cleary)	GPT, Swale, Wetland	Wetland – surface area 3,100 m ²	
Northern Sector (Paul St)	GPTs, Swales, Wetland	Wetland – surface area 12,000 m ²	
Eastern Sector (Thornton)	GPT, Swale, Wetland	Wetland – surface area 1,800 m ²	Discharges to Northern Sector Wetland

The general location and size of the various water quality facilities is shown in **Figure 3**

Where the piped drainage system discharges into the swales, a GPT will be located to control litter from the site. The swales, wetlands and bioretention basins will then assist in the control of weeds (by the reduction in nutrient loads) and provide spill control.

As part of the next stage of the project development, of the stormwater management system it is recommended that a water quality monitoring program be developed to describe how the effectiveness of the proposed system can be monitored and maintained over time.

3.2.4 RIPARIAN CORRIDORS AND AMENITY

The bulk of the natural drainage channel in and adjacent to the development areas do not have clearly defined riparian corridors associated with them. This has occurred for two basic reasons:

- **First** – most of the drainage lines are near the top of their respective catchments and there are not clearly defined stream forms and any associated zones of riparian vegetation have not developed over time; and
- **Second** – the majority of the area has been farmed or used for residential purposes for many decades and much of the original vegetation has been removed and/or extensively modified.

Notwithstanding these provisos, local riparian plants will be introduced/restored as an integral part of the landscaping where appropriate and practical. Within the Master Plan, there are three distinct open space areas which are designated to have extensive water quantity/quality facilities. These areas are:

- Easterly margin of Fernadell – Fernadell Park.
- Hawkesbury River Bank – Riverbank Park.
- East of Hall Street near Paul Street – Hall Street Park.

The facilities within these areas have been designed to meet the specified quantity and quality development criteria. Also, the proposed wetland facilities offer the opportunity to collect, treat and permit the reuse of stormwater for open space uses. These opportunities are discussed in **Section 3.2.5.**

3.2.5 OPPORTUNITIES FOR TOTAL WATER CYCLE MANAGEMENT

The DCP does not require the mandatory use of rainwater tanks or On Site Detention (OSD) facilities. However, the introduction of BASIX has required the provision of rainwater tanks for all new residential buildings. The required detention facilities will be incorporated into/or beside the proposed drainage lines. Notwithstanding this requirement, the major stormwater facilities at Fernadell, Riverbank and Hall Street Parks offer the opportunity for local stormwater harvesting and reuse at an estate level.

- **Fernadell Park.** The strata underlying Fernadell Park is sandy in nature and there will be significant leakage out of any detention facility. Such leakage will be an effective way to dissipate

any additional runoff from for the upstream areas into the groundwater table and thus reduce the flows in the downstream channels. On the other hand, if this/these ponds are lined, then the stormwater can be stored and used on the local playing fields. The opportunities to exploit these opportunities will be examined in detail in the detailed design associated with the preparation of the CC drawings.

A preliminary analysis has been undertaken of the flows derived from Fernadell and Bona Vista. The basic calculations are shown below and the opportunities summarised in **Table 5**.

Table 5. Potential Stormwater Reuse Yields.

Catchment	Rainwater Tank Yield	Catchment Surplus	Combined Yield
	(ML)	(ML)	(ML)
Fernadell	21	7	28
Bona Vista	15	17	32

These results show that there is significant water available for use on site from rainwater tanks or from community facilities for public use. If water tanks are not available then there will be a corresponding increase in the quantity of water available at the community level.

Also the Pitt Town Road Golf Club has indicated a desire to take any stormwater flows available from this source. Preliminary calculations indicated that a yield of at least 24 mega litres/year could be available. This could also be augmented by the Golf Club by tapping into the reclaimed wastewater available from the McGraths Hill Wastewater Treatment Plant (if constructed). There would be opportunities to lay an additional reclaimed water pipe in the common trench to be constructed for the water and wastewater supply augmentation of Pitt Town.

- **Riverbank Park.** The strata underlying Riverbank Park is sandy in nature and there will be significant leakage out of any detention facility. Such leakage will be an effective way to dissipate any additional runoff from for the upstream areas into the groundwater table and thus reduce the flows in the Hawkesbury River. On the other hand, if this/these ponds are lined, then the stormwater can be stored and used within the open space areas adjacent to the river. The opportunities to exploit these opportunities will be examined in detail in the detailed design associated with the preparation of the CC drawings.

- **Hall Street Park.** ¹ The strata underlying Hall Street Park is sandy in nature and there will be significant leakage out of any detention facility. Such leakage will be an effective way to dissipate any additional runoff from the upstream areas into the groundwater table and thus reduce the flows in the downstream channels. On the other hand, if this/these ponds are lined, then the stormwater can be stored and used for aesthetic and/or landscape purposes. The opportunities to exploit these opportunities will be examined in detail in the detailed design associated with the preparation of the CC drawings.

3.2.6 CONCLUSION

The analysis of the water cycle management for the extended Pitt Town development which can cater for up to 915 dwellings shows that both the water quantity and quality issues can be managed within the requirements of the DCP.

¹ The catchment draining to this park is very limited and we have a real concern that there will not be sufficient local runoff to maintain the proposed water features let alone provide a possible supply for additional reuse.

APPENDIX B

MODEL RESULTS

Existing Case Rafts Model

 Rezoning Pitt Town Existing Conditions
 #####

ROUTING INCREMENT (MINS) = 3.00
 STORM DURATION (MINS) = 540.
 RETURN PERIOD (YRS) = 100.
 BX = 1.0000
 TOTAL OF FIRST SUB-AREAS (ha) = 210.34
 TOTAL OF SECOND SUB-AREAS (ha) = 19.43
 TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	18.060	20.00	1.500	2.500	.5000	123.54	156.61	2.126	300.0	0.000
NorthWest	18.060	20.00	1.500	2.500	.5000	123.54	156.61	4.188	324.0	0.000
North	18.060	20.00	1.500	2.500	.5000	123.54	156.61	1.835	300.0	0.000
NorthEast	18.060	20.00	1.500	2.500	.5000	123.54	156.61	1.095	300.0	0.000
NorthZone	18.060	20.00	0.000	2.500	0.000	123.54	0.000	6.830	300.0	0.000
DummyNth	18.060	20.00	0.000	2.500	0.000	123.54	0.000	8.956	300.0	0.000
East1	18.060	20.00	1.500	2.500	.5000	123.54	156.61	2.096	330.0	0.000
East2	18.060	20.00	0.000	2.500	0.000	123.54	0.000	0.0000	273.0	0.000
East3	18.060	20.00	0.000	2.500	0.000	123.54	0.000	0.0000	273.0	0.000
DummyEast	18.060	20.00	0.000	2.500	0.000	123.54	0.000	10.753	300.0	0.000
Central	18.060	20.00	1.500	2.500	.5000	123.54	156.61	6.584	330.0	0.000
Fernadell	18.060	20.00	1.500	2.500	.5000	123.54	156.61	4.462	327.0	0.000
BVPart	18.060	20.00	1.500	2.500	.5000	123.54	156.61	1.734	330.0	0.000
FernBasin	18.060	20.00	0.000	2.500	0.000	123.54	0.000	6.193	330.0	0.000
BVSeparat	18.060	20.00	1.500	2.500	.5000	123.54	156.61	3.617	330.0	0.000
Dummy	18.060	20.00	0.000	2.500	0.000	123.54	0.000	26.398	330.0	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
#####

ROUTING INCREMENT (MINS) = 2.00
STORM DURATION (MINS) = 360.
RETURN PERIOD (YRS) = 100.
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NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
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Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

Link	Average	Init. Loss	Cont. Loss	Excess Rain	Peak	Time	Link
Label	Intensity	#1	#2	#1	#2	Inflow	Lag
	(mm/h)	(mm)		(mm/h)	(mm)	(m^3/s)	Peak mins
Western	22.880	20.00	1.500	2.500	.5000	105.03	132.85
NorthWest	22.880	20.00	1.500	2.500	.5000	105.03	132.85
North	22.880	20.00	1.500	2.500	.5000	105.03	132.85
NorthEast	22.880	20.00	1.500	2.500	.5000	105.03	132.85
NorthZone	22.880	20.00	0.000	2.500	0.000	105.03	0.000
DummyNth	22.880	20.00	0.000	2.500	0.000	105.03	0.000
East1	22.880	20.00	1.500	2.500	.5000	105.03	132.85
East2	22.880	20.00	0.000	2.500	0.000	105.03	0.000
East3	22.880	20.00	0.000	2.500	0.000	105.03	0.000
DummyEast	22.880	20.00	0.000	2.500	0.000	105.03	0.000
Central	22.880	20.00	1.500	2.500	.5000	105.03	132.85
Fernadell	22.880	20.00	1.500	2.500	.5000	105.03	132.85
BVPart	22.880	20.00	1.500	2.500	.5000	105.03	132.85
FernBasin	22.880	20.00	0.000	2.500	0.000	105.03	0.000
BVSeparat	22.880	20.00	1.500	2.500	.5000	105.03	132.85
Dummy	22.880	20.00	0.000	2.500	0.000	105.03	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
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ROUTING INCREMENT (MINS) = 2.00
STORM DURATION (MINS) = 270.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	27.360	20.00	1.500	2.500	.5000	93.703	119.45	2.943	76.00	0.000
NorthWest	27.360	20.00	1.500	2.500	.5000	93.703	119.45	4.555	90.00	0.000
North	27.360	20.00	1.500	2.500	.5000	93.703	119.45	2.657	76.00	0.000
NorthEast	27.360	20.00	1.500	2.500	.5000	93.703	119.45	1.474	76.00	0.000
NorthZone	27.360	20.00	0.000	2.500	0.000	93.703	0.000	7.991	90.00	0.000
DummyNth	27.360	20.00	0.000	2.500	0.000	93.703	0.000	10.518	90.00	0.000
East1	27.360	20.00	1.500	2.500	.5000	93.703	119.45	1.846	102.0	0.000
East2	27.360	20.00	0.000	2.500	0.000	93.703	0.000	0.0000	62.00	0.000
East3	27.360	20.00	0.000	2.500	0.000	93.703	0.000	0.0000	62.00	0.000
DummyEast	27.360	20.00	0.000	2.500	0.000	93.703	0.000	12.357	90.00	0.000
Central	27.360	20.00	1.500	2.500	.5000	93.703	119.45	5.582	106.0	0.000
Fernadell	27.360	20.00	1.500	2.500	.5000	93.703	119.45	4.539	92.00	0.000
BVPart	27.360	20.00	1.500	2.500	.5000	93.703	119.45	1.654	90.00	0.000
FernBasin	27.360	20.00	0.000	2.500	0.000	93.703	0.000	6.163	92.00	0.000
BVSeparat	27.360	20.00	1.500	2.500	.5000	93.703	119.45	3.039	132.0	0.000
Dummy	27.360	20.00	0.000	2.500	0.000	93.703	0.000	26.738	90.00	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 180.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

Link	Average	Init. Loss	Cont. Loss	Excess Rain	Peak	Time	Link
Label	Intensity	#1	#2	#1	#2	Inflow	Lag
	(mm/h)	(mm)		(mm/h)	(mm)	(m^3/s)	Peak mins
Western	34.690	20.00	1.500	2.500	.5000	77.695	101.09
NorthWest	34.690	20.00	1.500	2.500	.5000	77.695	101.09
North	34.690	20.00	1.500	2.500	.5000	77.695	101.09
NorthEast	34.690	20.00	1.500	2.500	.5000	77.695	101.09
NorthZone	34.690	20.00	0.000	2.500	0.000	77.695	0.000
DummyNth	34.690	20.00	0.000	2.500	0.000	77.695	0.000
East1	34.690	20.00	1.500	2.500	.5000	77.695	101.09
East2	34.690	20.00	0.000	2.500	0.000	77.695	0.000
East3	34.690	20.00	0.000	2.500	0.000	77.695	0.000
DummyEast	34.690	20.00	0.000	2.500	0.000	77.695	0.000
Central	34.690	20.00	1.500	2.500	.5000	77.695	101.09
Fernadell	34.690	20.00	1.500	2.500	.5000	77.695	101.09
BVPart	34.690	20.00	1.500	2.500	.5000	77.695	101.09
FernBasin	34.690	20.00	0.000	2.500	0.000	77.695	0.000
BVSeparat	34.690	20.00	1.500	2.500	.5000	77.695	101.09
Dummy	34.690	20.00	0.000	2.500	0.000	77.695	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 120.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	44.220	20.00	1.500	2.500	.5000	64.398	85.965	3.991	40.00	0.000
NorthWest	44.220	20.00	1.500	2.500	.5000	64.398	85.965	4.502	65.00	0.000
North	44.220	20.00	1.500	2.500	.5000	64.398	85.965	3.919	40.00	0.000
NorthEast	44.220	20.00	1.500	2.500	.5000	64.398	85.965	1.961	41.00	0.000
NorthZone	44.220	20.00	0.000	2.500	0.000	64.398	0.000	9.620	40.00	0.000
DummyNth	44.220	20.00	0.000	2.500	0.000	64.398	0.000	13.610	40.00	0.000
East1	44.220	20.00	1.500	2.500	.5000	64.398	85.965	1.966	80.00	0.000
East2	44.220	20.00	0.000	2.500	0.000	64.398	0.000	0.0000	31.00	0.000
East3	44.220	20.00	0.000	2.500	0.000	64.398	0.000	0.0000	31.00	0.000
DummyEast	44.220	20.00	0.000	2.500	0.000	64.398	0.000	15.033	40.00	0.000
Central	44.220	20.00	1.500	2.500	.5000	64.398	85.965	6.070	80.00	0.000
Fernadell	44.220	20.00	1.500	2.500	.5000	64.398	85.965	4.658	65.00	0.000
BVPart	44.220	20.00	1.500	2.500	.5000	64.398	85.965	1.659	65.00	0.000
FernBasin	44.220	20.00	0.000	2.500	0.000	64.398	0.000	6.317	65.00	0.000
BVSeparat	44.220	20.00	1.500	2.500	.5000	64.398	85.965	3.206	81.00	0.000
Dummy	44.220	20.00	0.000	2.500	0.000	64.398	0.000	25.888	40.00	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
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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 (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	52.420	20.00	1.500	2.500	.5000	55.547	76.397	3.678	30.00	0.000
NorthWest	52.420	20.00	1.500	2.500	.5000	55.547	76.397	4.149	56.00	0.000
North	52.420	20.00	1.500	2.500	.5000	55.547	76.397	3.790	30.00	0.000
NorthEast	52.420	20.00	1.500	2.500	.5000	55.547	76.397	1.755	30.00	0.000
NorthZone	52.420	20.00	0.000	2.500	0.000	55.547	0.000	9.480	30.00	0.000
DummyNth	52.420	20.00	0.000	2.500	0.000	55.547	0.000	13.158	30.00	0.000
East1	52.420	20.00	1.500	2.500	.5000	55.547	76.397	1.784	61.00	0.000
East2	52.420	20.00	0.000	2.500	0.000	55.547	0.000	0.0000	26.00	0.000
East3	52.420	20.00	0.000	2.500	0.000	55.547	0.000	0.0000	26.00	0.000
DummyEast	52.420	20.00	0.000	2.500	0.000	55.547	0.000	14.639	30.00	0.000
Central	52.420	20.00	1.500	2.500	.5000	55.547	76.397	5.483	73.00	0.000
Fernadell	52.420	20.00	1.500	2.500	.5000	55.547	76.397	4.348	60.00	0.000
BVPart	52.420	20.00	1.500	2.500	.5000	55.547	76.397	1.552	30.00	0.000
FernBasin	52.420	20.00	0.000	2.500	0.000	55.547	0.000	5.881	60.00	0.000
BVSeparat	52.420	20.00	1.500	2.500	.5000	55.547	76.397	2.938	75.00	0.000
Dummy	52.420	20.00	0.000	2.500	0.000	55.547	0.000	25.726	30.00	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 60.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	66.300	20.00	1.500	2.500	.5000	44.467	64.317	3.354	34.00	0.000
NorthWest	66.300	20.00	1.500	2.500	.5000	44.467	64.317	3.695	55.00	0.000
North	66.300	20.00	1.500	2.500	.5000	44.467	64.317	3.130	30.00	0.000
NorthEast	66.300	20.00	1.500	2.500	.5000	44.467	64.317	1.670	35.00	0.000
NorthZone	66.300	20.00	0.000	2.500	0.000	44.467	0.000	7.806	35.00	0.000
DummyNth	66.300	20.00	0.000	2.500	0.000	44.467	0.000	11.132	35.00	0.000
East1	66.300	20.00	1.500	2.500	.5000	44.467	64.317	1.577	60.00	0.000
East2	66.300	20.00	0.000	2.500	0.000	44.467	0.000	0.0000	21.00	0.000
East3	66.300	20.00	0.000	2.500	0.000	44.467	0.000	0.0000	21.00	0.000
DummyEast	66.300	20.00	0.000	2.500	0.000	44.467	0.000	12.418	35.00	0.000
Central	66.300	20.00	1.500	2.500	.5000	44.467	64.317	4.699	60.00	0.000
Fernadell	66.300	20.00	1.500	2.500	.5000	44.467	64.317	3.898	55.00	0.000
BVPart	66.300	20.00	1.500	2.500	.5000	44.467	64.317	1.339	55.00	0.000
FernBasin	66.300	20.00	0.000	2.500	0.000	44.467	0.000	5.236	55.00	0.000
BVSeparat	66.300	20.00	1.500	2.500	.5000	44.467	64.317	2.487	60.00	0.000
Dummy	66.300	20.00	0.000	2.500	0.000	44.467	0.000	22.192	35.00	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 45.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	78.340	20.00	1.500	2.500	.5000	37.422	56.897	2.948	30.00	0.000
NorthWest	78.340	20.00	1.500	2.500	.5000	37.422	56.897	3.274	40.00	0.000
North	78.340	20.00	1.500	2.500	.5000	37.422	56.897	2.679	30.00	0.000
NorthEast	78.340	20.00	1.500	2.500	.5000	37.422	56.897	1.456	30.00	0.000
NorthZone	78.340	20.00	0.000	2.500	0.000	37.422	0.000	7.011	30.00	0.000
DummyNth	78.340	20.00	0.000	2.500	0.000	37.422	0.000	9.959	30.00	0.000
East1	78.340	20.00	1.500	2.500	.5000	37.422	56.897	1.326	45.00	0.000
East2	78.340	20.00	0.000	2.500	0.000	37.422	0.000	0.0000	15.00	0.000
East3	78.340	20.00	0.000	2.500	0.000	37.422	0.000	0.0000	15.00	0.000
DummyEast	78.340	20.00	0.000	2.500	0.000	37.422	0.000	11.055	30.00	0.000
Central	78.340	20.00	1.500	2.500	.5000	37.422	56.897	3.870	45.00	0.000
Fernadell	78.340	20.00	1.500	2.500	.5000	37.422	56.897	3.351	45.00	0.000
BVPart	78.340	20.00	1.500	2.500	.5000	37.422	56.897	1.196	41.00	0.000
FernBasin	78.340	20.00	0.000	2.500	0.000	37.422	0.000	4.531	45.00	0.000
BVSeparat	78.340	20.00	1.500	2.500	.5000	37.422	56.897	2.055	45.00	0.000
Dummy	78.340	20.00	0.000	2.500	0.000	37.422	0.000	20.081	40.00	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 30.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	98.180	20.00	1.500	2.500	.5000	28.257	47.340	2.674	25.00	0.000
NorthWest	98.180	20.00	1.500	2.500	.5000	28.257	47.340	2.670	15.00	0.000
North	98.180	20.00	1.500	2.500	.5000	28.257	47.340	2.464	24.00	0.000
NorthEast	98.180	20.00	1.500	2.500	.5000	28.257	47.340	1.293	25.00	0.000
NorthZone	98.180	20.00	0.000	2.500	0.000	28.257	0.000	6.218	25.00	0.000
DummyNth	98.180	20.00	0.000	2.500	0.000	28.257	0.000	8.892	25.00	0.000
East1	98.180	20.00	1.500	2.500	.5000	28.257	47.340	0.9877	30.00	0.000
East2	98.180	20.00	0.000	2.500	0.000	28.257	0.000	0.0000	12.00	0.000
East3	98.180	20.00	0.000	2.500	0.000	28.257	0.000	0.0000	12.00	0.000
DummyEast	98.180	20.00	0.000	2.500	0.000	28.257	0.000	9.827	25.00	0.000
Central	98.180	20.00	1.500	2.500	.5000	28.257	47.340	2.986	30.00	0.000
Fernadell	98.180	20.00	1.500	2.500	.5000	28.257	47.340	2.479	30.00	0.000
BVPart	98.180	20.00	1.500	2.500	.5000	28.257	47.340	1.115	15.00	0.000
FernBasin	98.180	20.00	0.000	2.500	0.000	28.257	0.000	3.396	30.00	0.000
BVSeparat	98.180	20.00	1.500	2.500	.5000	28.257	47.340	1.502	30.00	0.000
Dummy	98.180	20.00	0.000	2.500	0.000	28.257	0.000	17.215	26.00	0.000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Existing Conditions
#####

ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 20.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 210.34
TOTAL OF SECOND SUB-AREAS (ha) = 19.43
TOTAL OF ALL SUB-AREAS (ha) = 229.77

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)		(%)		(%)						
Western	12.592	1.399	10.00	10.00	0.000	100.0	.035	.020	.0390	.0008	1.000
NorthWest	30.640	4.080	1.900	1.900	1.000	100.0	.035	.020	.1354	.0034	2.000
North	10.376	1.653	9.600	9.600	3.000	100.0	.035	.020	.0315	.0009	3.000
NorthEast	6.502	0.7224	6.300	6.300	0.000	100.0	.035	.020	.0348	.0008	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	16.582	1.488	1.000	1.000	0.000	100.0	.035	.020	.1418	.0027	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Central	54.060	4.380	1.500	1.500	0.000	100.0	.035	.020	.2142	.0039	8.000
Fernadell	35.390	1.860	2.000	2.000	0.000	100.0	.035	.020	.1488	.0022	9.000
BVPart	12.941	1.849	1.000	1.000	0.000	100.0	.035	.020	.1247	.0031	10.00
FernBasin	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	9.001
BVSeparat	31.261	1.995	1.000	1.000	0.000	100.0	.035	.020	.1972	.0032	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	121.37	20.00	1.500	2.500	.5000	19.957	38.790	2.212	20.00	0.000
NorthWest	121.37	20.00	1.500	2.500	.5000	19.957	38.790	2.498	15.00	0.000
North	121.37	20.00	1.500	2.500	.5000	19.957	38.790	2.200	20.00	0.000
NorthEast	121.37	20.00	1.500	2.500	.5000	19.957	38.790	1.061	20.00	0.000
NorthZone	121.37	20.00	0.000	2.500	0.000	19.957	0.000	5.566	15.00	0.000
DummyNth	121.37	20.00	0.000	2.500	0.000	19.957	0.000	7.518	15.00	0.000
East1	121.37	20.00	1.500	2.500	.5000	19.957	38.790	0.9230	15.00	0.000
East2	121.37	20.00	0.000	2.500	0.000	19.957	0.000	0.0000	10.00	0.000
East3	121.37	20.00	0.000	2.500	0.000	19.957	0.000	0.0000	10.00	0.000
DummyEast	121.37	20.00	0.000	2.500	0.000	19.957	0.000	8.441	15.00	0.000
Central	121.37	20.00	1.500	2.500	.5000	19.957	38.790	2.772	15.00	0.000
Fernadell	121.37	20.00	1.500	2.500	.5000	19.957	38.790	1.674	15.00	0.000
BVPart	121.37	20.00	1.500	2.500	.5000	19.957	38.790	1.020	15.00	0.000
FernBasin	121.37	20.00	0.000	2.500	0.000	19.957	0.000	2.694	15.00	0.000
BVSeparat	121.37	20.00	1.500	2.500	.5000	19.957	38.790	1.343	15.00	0.000
Dummy	121.37	20.00	0.000	2.500	0.000	19.957	0.000	15.249	15.00	0.000

Proposed Case Rafts Model

 Rezoning Pitt Town Proposed Conditions
 #####

ROUTING INCREMENT (MINS) = 3.00
 STORM DURATION (MINS) = 540.
 RETURN PERIOD (YRS) = 100.
 BX = 1.0000
 TOTAL OF FIRST SUB-AREAS (ha) = 156.02
 TOTAL OF SECOND SUB-AREAS (ha) = 73.45
 TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

Link	Average	Init. Loss	Cont. Loss	Excess Rain	Peak	Time	Link
Label	Intensity	#1	#2	#1	#2	Inflow	to
	(mm/h)	(mm)		(mm/h)		(m^3/s)	Peak
							mins
Western	18.060	20.00	1.500	2.500	.5000	123.54	156.61
NorthWest	18.060	20.00	1.500	2.500	.5000	123.54	156.61
North	18.060	20.00	1.500	2.500	.5000	123.54	156.61
NorthEast	18.060	20.00	1.500	2.500	.5000	123.54	156.61
NorthZone	18.060	20.00	0.000	2.500	0.000	123.54	0.000
DummyNth	18.060	20.00	0.000	2.500	0.000	123.54	0.000
East1	18.060	20.00	1.500	2.500	.5000	123.54	156.61
East2	18.060	20.00	0.000	2.500	0.000	123.54	0.000
East3	18.060	20.00	0.000	2.500	0.000	123.54	0.000
DummyEast	18.060	20.00	0.000	2.500	0.000	123.54	0.000
Fernadell	18.060	20.00	1.500	2.500	.5000	123.54	156.61
BVPart	18.060	20.00	1.500	2.500	.5000	123.54	156.61
FBasin	18.060	20.00	0.000	2.500	0.000	123.54	0.000
Central	18.060	20.00	1.500	2.500	.5000	123.54	156.61
BVSeparat	18.060	20.00	1.500	2.500	.5000	123.54	156.61
Dummy	18.060	20.00	0.000	2.500	0.000	123.54	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	----- Basin -----		
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	303.0	8.289	342.0	6.283	92845.1	0.0000	24894.2	0.9220

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Proposed Conditions
#####

ROUTING INCREMENT (MINS) = 2.00
STORM DURATION (MINS) = 360.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	22.880	20.00	1.500	2.500	.5000	105.03	132.85	2.400	120.0	0.000
NorthWest	22.880	20.00	1.500	2.500	.5000	105.03	132.85	4.785	120.0	0.000
North	22.880	20.00	1.500	2.500	.5000	105.03	132.85	2.106	114.0	0.000
NorthEast	22.880	20.00	1.500	2.500	.5000	105.03	132.85	1.244	120.0	0.000
NorthZone	22.880	20.00	0.000	2.500	0.000	105.03	0.000	8.130	120.0	0.000
DummyNth	22.880	20.00	0.000	2.500	0.000	105.03	0.000	10.530	120.0	0.000
East1	22.880	20.00	1.500	2.500	.5000	105.03	132.85	2.308	120.0	0.000
East2	22.880	20.00	0.000	2.500	0.000	105.03	0.000	0.0000	92.00	0.000
East3	22.880	20.00	0.000	2.500	0.000	105.03	0.000	0.0000	92.00	0.000
DummyEast	22.880	20.00	0.000	2.500	0.000	105.03	0.000	12.838	120.0	0.000
Fernadell	22.880	20.00	1.500	2.500	.5000	105.03	132.85	5.038	120.0	2.000
BVPart	22.880	20.00	1.500	2.500	.5000	105.03	132.85	3.605	150.0	4.000
FBasin	22.880	20.00	0.000	2.500	0.000	105.03	0.000	8.284	122.0	10.00
Central	22.880	20.00	1.500	2.500	.5000	105.03	132.85	6.745	150.0	0.000
BVSeparat	22.880	20.00	1.500	2.500	.5000	105.03	132.85	1.943	120.0	0.000
Dummy	22.880	20.00	0.000	2.500	0.000	105.03	0.000	23.134	150.0	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	122.0	8.284	180.0	5.419	78843.4	0.0000	23011.8	0.8523

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

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Water Cycle Report

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Rezoning Pitt Town Proposed Conditions
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ROUTING INCREMENT (MINS) = 2.00
STORM DURATION (MINS) = 270.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	27.360	20.00	1.500	2.500	.5000	93.703	119.45	2.981	76.00	0.000
NorthWest	27.360	20.00	1.500	2.500	.5000	93.703	119.45	5.209	90.00	0.000
North	27.360	20.00	1.500	2.500	.5000	93.703	119.45	2.890	74.00	0.000
NorthEast	27.360	20.00	1.500	2.500	.5000	93.703	119.45	1.588	74.00	0.000
NorthZone	27.360	20.00	0.000	2.500	0.000	93.703	0.000	9.142	74.00	0.000
DummyNth	27.360	20.00	0.000	2.500	0.000	93.703	0.000	12.109	74.00	0.000
East1	27.360	20.00	1.500	2.500	.5000	93.703	119.45	2.453	90.00	0.000
East2	27.360	20.00	0.000	2.500	0.000	93.703	0.000	0.0000	62.00	0.000
East3	27.360	20.00	0.000	2.500	0.000	93.703	0.000	0.0000	62.00	0.000
DummyEast	27.360	20.00	0.000	2.500	0.000	93.703	0.000	14.496	74.00	0.000
Fernadell	27.360	20.00	1.500	2.500	.5000	93.703	119.45	5.470	90.00	2.000
BVPart	27.360	20.00	1.500	2.500	.5000	93.703	119.45	3.664	90.00	4.000
FBasin	27.360	20.00	0.000	2.500	0.000	93.703	0.000	8.986	92.00	10.00
Central	27.360	20.00	1.500	2.500	.5000	93.703	119.45	6.234	90.00	0.000
BVSeparat	27.360	20.00	1.500	2.500	.5000	93.703	119.45	2.090	90.00	0.000
Dummy	27.360	20.00	0.000	2.500	0.000	93.703	0.000	23.921	90.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	92.00	8.985	132.0	5.015	70605.5	0.0000	21865.4	0.8098

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

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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 (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	34.690	20.00	1.500	2.500	.5000	77.695	101.09	3.254	45.00	0.000
NorthWest	34.690	20.00	1.500	2.500	.5000	77.695	101.09	4.853	45.00	0.000
North	34.690	20.00	1.500	2.500	.5000	77.695	101.09	3.211	45.00	0.000
NorthEast	34.690	20.00	1.500	2.500	.5000	77.695	101.09	1.771	45.00	0.000
NorthZone	34.690	20.00	0.000	2.500	0.000	77.695	0.000	9.835	45.00	0.000
DummyNth	34.690	20.00	0.000	2.500	0.000	77.695	0.000	13.088	45.00	0.000
East1	34.690	20.00	1.500	2.500	.5000	77.695	101.09	2.542	45.00	0.000
East2	34.690	20.00	0.000	2.500	0.000	77.695	0.000	0.0000	31.00	0.000
East3	34.690	20.00	0.000	2.500	0.000	77.695	0.000	0.0000	31.00	0.000
DummyEast	34.690	20.00	0.000	2.500	0.000	77.695	0.000	15.630	45.00	0.000
Fernadell	34.690	20.00	1.500	2.500	.5000	77.695	101.09	5.170	45.00	2.000
BVPart	34.690	20.00	1.500	2.500	.5000	77.695	101.09	3.509	45.00	4.000
FBasin	34.690	20.00	0.000	2.500	0.000	77.695	0.000	8.525	47.00	10.00
Central	34.690	20.00	1.500	2.500	.5000	77.695	101.09	5.925	75.00	0.000
BVSeparat	34.690	20.00	1.500	2.500	.5000	77.695	101.09	1.983	45.00	0.000
Dummy	34.690	20.00	0.000	2.500	0.000	77.695	0.000	23.344	45.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	47.00	8.525	101.0	5.005	58931.6	0.0000	22072.0	0.8175

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

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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 (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	44.220	20.00	1.500	2.500	.5000	64.398	85.965	4.183	40.00	0.000
NorthWest	44.220	20.00	1.500	2.500	.5000	64.398	85.965	7.066	35.00	0.000
North	44.220	20.00	1.500	2.500	.5000	64.398	85.965	5.280	35.00	0.000
NorthEast	44.220	20.00	1.500	2.500	.5000	64.398	85.965	2.339	40.00	0.000
NorthZone	44.220	20.00	0.000	2.500	0.000	64.398	0.000	14.360	35.00	0.000
DummyNth	44.220	20.00	0.000	2.500	0.000	64.398	0.000	17.684	35.00	0.000
East1	44.220	20.00	1.500	2.500	.5000	64.398	85.965	3.984	35.00	0.000
East2	44.220	20.00	0.000	2.500	0.000	64.398	0.000	0.0000	31.00	0.000
East3	44.220	20.00	0.000	2.500	0.000	64.398	0.000	0.0000	31.00	0.000
DummyEast	44.220	20.00	0.000	2.500	0.000	64.398	0.000	21.668	35.00	0.000
Fernadell	44.220	20.00	1.500	2.500	.5000	64.398	85.965	7.609	35.00	2.000
BVPart	44.220	20.00	1.500	2.500	.5000	64.398	85.965	5.391	35.00	4.000
FBasin	44.220	20.00	0.000	2.500	0.000	64.398	0.000	12.407	38.00	10.00
Central	44.220	20.00	1.500	2.500	.5000	64.398	85.965	7.080	35.00	0.000
BVSeparat	44.220	20.00	1.500	2.500	.5000	64.398	85.965	2.939	35.00	0.000
Dummy	44.220	20.00	0.000	2.500	0.000	64.398	0.000	31.902	35.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	38.00	12.41	86.00	5.007	49363.9	0.0000	21552.2	0.7982

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

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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 (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	52.420	20.00	1.500	2.500	.5000	55.547	76.397	4.164	30.00	0.000
NorthWest	52.420	20.00	1.500	2.500	.5000	55.547	76.397	7.743	30.00	0.000
North	52.420	20.00	1.500	2.500	.5000	55.547	76.397	5.697	30.00	0.000
NorthEast	52.420	20.00	1.500	2.500	.5000	55.547	76.397	2.430	30.00	0.000
NorthZone	52.420	20.00	0.000	2.500	0.000	55.547	0.000	15.870	30.00	0.000
DummyNth	52.420	20.00	0.000	2.500	0.000	55.547	0.000	20.034	30.00	0.000
East1	52.420	20.00	1.500	2.500	.5000	55.547	76.397	4.318	30.00	0.000
East2	52.420	20.00	0.000	2.500	0.000	55.547	0.000	0.0000	26.00	0.000
East3	52.420	20.00	0.000	2.500	0.000	55.547	0.000	0.0000	26.00	0.000
DummyEast	52.420	20.00	0.000	2.500	0.000	55.547	0.000	24.352	30.00	0.000
Fernadell	52.420	20.00	1.500	2.500	.5000	55.547	76.397	8.326	30.00	2.000
BVPart	52.420	20.00	1.500	2.500	.5000	55.547	76.397	5.857	30.00	4.000
FBasin	52.420	20.00	0.000	2.500	0.000	55.547	0.000	13.513	32.00	10.00
Central	52.420	20.00	1.500	2.500	.5000	55.547	76.397	7.981	30.00	0.000
BVSeparat	52.420	20.00	1.500	2.500	.5000	55.547	76.397	3.261	30.00	0.000
Dummy	52.420	20.00	0.000	2.500	0.000	55.547	0.000	35.918	30.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	32.00	13.51	89.00	4.766	43048.3	0.0000	19567.9	0.7247

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

Pitt Town Major Project Application

Water Cycle Report

Prepared for Johnson Property Group



Rezoning Pitt Town Proposed Conditions
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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 60.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	66.300	20.00	1.500	2.500	.5000	44.467	64.317	3.333	33.00	0.000
NorthWest	66.300	20.00	1.500	2.500	.5000	44.467	64.317	6.838	25.00	0.000
North	66.300	20.00	1.500	2.500	.5000	44.467	64.317	5.125	25.00	0.000
NorthEast	66.300	20.00	1.500	2.500	.5000	44.467	64.317	1.911	25.00	0.000
NorthZone	66.300	20.00	0.000	2.500	0.000	44.467	0.000	13.873	25.00	0.000
DummyNth	66.300	20.00	0.000	2.500	0.000	44.467	0.000	17.037	25.00	0.000
East1	66.300	20.00	1.500	2.500	.5000	44.467	64.317	3.855	25.00	0.000
East2	66.300	20.00	0.000	2.500	0.000	44.467	0.000	0.0000	21.00	0.000
East3	66.300	20.00	0.000	2.500	0.000	44.467	0.000	0.0000	21.00	0.000
DummyEast	66.300	20.00	0.000	2.500	0.000	44.467	0.000	20.892	25.00	0.000
Fernadell	66.300	20.00	1.500	2.500	.5000	44.467	64.317	7.375	25.00	2.000
BVPart	66.300	20.00	1.500	2.500	.5000	44.467	64.317	5.235	25.00	4.000
FBasin	66.300	20.00	0.000	2.500	0.000	44.467	0.000	11.978	27.00	10.00
Central	66.300	20.00	1.500	2.500	.5000	44.467	64.317	6.843	25.00	0.000
BVSeparat	66.300	20.00	1.500	2.500	.5000	44.467	64.317	2.860	25.00	0.000
Dummy	66.300	20.00	0.000	2.500	0.000	44.467	0.000	30.674	25.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	27.00	11.98	72.00	3.908	35240.7	0.0000	17171.5	0.6360

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

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Water Cycle Report

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Rezoning Pitt Town Proposed Conditions
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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 45.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	78.340	20.00	1.500	2.500	.5000	37.422	56.897	3.023	30.00	0.000
NorthWest	78.340	20.00	1.500	2.500	.5000	37.422	56.897	5.683	15.00	0.000
North	78.340	20.00	1.500	2.500	.5000	37.422	56.897	4.121	12.00	0.000
NorthEast	78.340	20.00	1.500	2.500	.5000	37.422	56.897	1.600	30.00	0.000
NorthZone	78.340	20.00	0.000	2.500	0.000	37.422	0.000	10.803	15.00	0.000
DummyNth	78.340	20.00	0.000	2.500	0.000	37.422	0.000	12.268	15.00	0.000
East1	78.340	20.00	1.500	2.500	.5000	37.422	56.897	3.388	15.00	0.000
East2	78.340	20.00	0.000	2.500	0.000	37.422	0.000	0.0000	15.00	0.000
East3	78.340	20.00	0.000	2.500	0.000	37.422	0.000	0.0000	15.00	0.000
DummyEast	78.340	20.00	0.000	2.500	0.000	37.422	0.000	15.656	15.00	0.000
Fernadell	78.340	20.00	1.500	2.500	.5000	37.422	56.897	6.179	15.00	2.000
BVPart	78.340	20.00	1.500	2.500	.5000	37.422	56.897	4.475	15.00	4.000
FBasin	78.340	20.00	0.000	2.500	0.000	37.422	0.000	10.295	17.00	10.00
Central	78.340	20.00	1.500	2.500	.5000	37.422	56.897	5.460	15.00	0.000
BVSeparat	78.340	20.00	1.500	2.500	.5000	37.422	56.897	2.439	15.00	0.000
Dummy	78.340	20.00	0.000	2.500	0.000	37.422	0.000	23.555	15.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	17.00	10.29	66.00	3.142	30202.3	0.0000	14897.4	0.5518

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 30.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	98.180	20.00	1.500	2.500	.5000	28.257	47.340	2.739	25.00	0.000
NorthWest	98.180	20.00	1.500	2.500	.5000	28.257	47.340	6.575	15.00	0.000
North	98.180	20.00	1.500	2.500	.5000	28.257	47.340	4.869	15.00	0.000
NorthEast	98.180	20.00	1.500	2.500	.5000	28.257	47.340	1.534	15.00	0.000
NorthZone	98.180	20.00	0.000	2.500	0.000	28.257	0.000	12.978	15.00	0.000
DummyNth	98.180	20.00	0.000	2.500	0.000	28.257	0.000	15.416	15.00	0.000
East1	98.180	20.00	1.500	2.500	.5000	28.257	47.340	3.803	15.00	0.000
East2	98.180	20.00	0.000	2.500	0.000	28.257	0.000	0.0000	12.00	0.000
East3	98.180	20.00	0.000	2.500	0.000	28.257	0.000	0.0000	12.00	0.000
DummyEast	98.180	20.00	0.000	2.500	0.000	28.257	0.000	19.219	15.00	0.000
Fernadell	98.180	20.00	1.500	2.500	.5000	28.257	47.340	7.110	15.00	2.000
BVPart	98.180	20.00	1.500	2.500	.5000	28.257	47.340	5.068	15.00	4.000
FBasin	98.180	20.00	0.000	2.500	0.000	28.257	0.000	11.872	17.00	10.00
Central	98.180	20.00	1.500	2.500	.5000	28.257	47.340	6.441	15.00	0.000
BVSeparat	98.180	20.00	1.500	2.500	.5000	28.257	47.340	2.783	15.00	0.000
Dummy	98.180	20.00	0.000	2.500	0.000	28.257	0.000	28.444	15.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	17.00	11.87	61.00	2.232	23812.2	0.0000	11953.5	0.4427

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000

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ROUTING INCREMENT (MINS) = 1.00
STORM DURATION (MINS) = 20.
RETURN PERIOD (YRS) = 100.
BX = 1.0000
TOTAL OF FIRST SUB-AREAS (ha) = 156.02
TOTAL OF SECOND SUB-AREAS (ha) = 73.45
TOTAL OF ALL SUB-AREAS (ha) = 229.47

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)		(%)		(%)						
Western	11.184	2.807	10.00	10.00	0.000	100.0	.035	.020	.0366	.0012	1.000
NorthWest	22.404	12.316	1.900	1.900	1.000	100.0	.035	.020	.1150	.0060	2.000
North	3.162	8.867	9.600	9.600	3.000	100.0	.035	.020	.0170	.0022	3.000
NorthEast	5.198	2.026	6.300	6.300	3.000	100.0	.035	.020	.0271	.0013	4.000
NorthZone	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	2.001
DummyNth	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.001
East1	10.705	7.360	1.000	1.000	0.000	100.0	.035	.020	.1130	.0063	5.000
East2	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	6.000
East3	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	7.000
DummyEast	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.002
Fernadell	23.840	13.400	2.000	2.000	0.000	100.0	.035	.020	.1212	.0061	8.000
BVPart	22.046	9.707	1.000	1.000	0.000	100.0	.035	.020	.1645	.0073	9.000
FBasin	.00001	0.000	2.100	0.000	4.000	0.000	.050	0.00	0.000	0.000	8.001
Central	46.755	11.688	1.500	1.500	0.000	100.0	.035	.020	.1986	.0066	10.00
BVSeparat	10.725	5.283	1.000	1.000	0.000	100.0	.035	.020	.1131	.0053	11.00
Dummy	.00001	0.000	.0010	0.000	0.000	0.000	.025	0.00	.0021	0.000	1.003

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
Western	121.37	20.00	1.500	2.500	.5000	19.957	38.790	2.379	15.00	0.000
NorthWest	121.37	20.00	1.500	2.500	.5000	19.957	38.790	6.725	9.000	0.000
North	121.37	20.00	1.500	2.500	.5000	19.957	38.790	4.999	7.000	0.000
NorthEast	121.37	20.00	1.500	2.500	.5000	19.957	38.790	1.506	15.00	0.000
NorthZone	121.37	20.00	0.000	2.500	0.000	19.957	0.000	12.639	10.00	0.000
DummyNth	121.37	20.00	0.000	2.500	0.000	19.957	0.000	14.261	10.00	0.000
East1	121.37	20.00	1.500	2.500	.5000	19.957	38.790	3.998	10.00	0.000
East2	121.37	20.00	0.000	2.500	0.000	19.957	0.000	0.0000	10.00	0.000
East3	121.37	20.00	0.000	2.500	0.000	19.957	0.000	0.0000	10.00	0.000
DummyEast	121.37	20.00	0.000	2.500	0.000	19.957	0.000	18.259	10.00	0.000
Fernadell	121.37	20.00	1.500	2.500	.5000	19.957	38.790	7.299	9.000	2.000
BVPart	121.37	20.00	1.500	2.500	.5000	19.957	38.790	5.293	10.00	4.000
FBasin	121.37	20.00	0.000	2.500	0.000	19.957	0.000	12.127	12.00	10.00
Central	121.37	20.00	1.500	2.500	.5000	19.957	38.790	6.374	9.000	0.000
BVSeparat	121.37	20.00	1.500	2.500	.5000	19.957	38.790	2.879	10.00	0.000
Dummy	121.37	20.00	0.000	2.500	0.000	19.957	0.000	27.503	10.00	0.000

SUMMARY OF BASIN RESULTS

Link	Time	Peak	Time	Peak	Total	-----	Basin	-----
Label	to	Inflow	to	Outflow	Inflow	Vol.	Vol.	Stage
	Peak	(m^3/s)	Peak	(m^3/s)	(m^3)	Avail	Used	Used
FBasin	12.00	12.13	54.00	1.510	18097.7	0.0000	9324.9	0.3454

SUMMARY OF BASIN OUTLET RESULTS

Link	No.	S/D	Dia	Width	Pipe	Pipe
Label	of	Factor	Length	Slope		
(m)	(m)	(m)	(m)	(%)		
FBasin	2.0		.7500	2.400	20.000	0.5000